inside

BIRDWATCHING is no longer merely a solitary pastime. Interest in ecology and conservation has turned ornithology into an important research field. David Jobbins reports on the development of the subject in Britain (page 11)

Most of the doctors in the House have PhDs, not medical degrees. Byron Criddle looks at the **PARLIAMENTARY ACADEMICS** and asks: is political life reconcilable with disinterested inquiry? (page 13)

Has **PHILOSOPHY** failed us? Kenneth Lawson argues that, far from being irrelevant to our cultural needs, philosophical thinking helps provide a common intellectual foundation (page 15)

Delius, Elgar and Holst (above) all died 50 years ago this spring. This week's "Arts Page" looks at the revival of interest in **BRITISH MUSIC** and the rehabilitation of some rather unfashionable reputations (page 17)

As Euro-elections and economic summitry loom, Sidney Pollard reviews Alan S. Milward's study of **POST-WAR RECONSTRUCTION**, the troubled years of the European Recovery Programme, 1945 to 1951 (page 18)

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New humanities and social science journals

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Published by Times Newspapers Ltd., P.O. Box 7, 200 Gray's Inn Road, London WC1X 8EZ, England. Typesetting by ComputerGraphics Ltd, 37-41 Compton St., London EC1, and printing by Northampton Mercury Co Ltd., Upper Mounts, Northampton NN1 3HR. Friday, June 8, 1984. Registered as a newspaper at the Post Office. ISSN 0049-3929.

TIMES PAST — THE TIMES

HIGHER EDUCATION SUPPLEMENT

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Popper's nightmare

The present Government seems hell-bent on centralization – but then so was the previous one and the one before that. The difference between Mrs Thatcher's Government and its predecessors is not its intention to centralize the power to take decisions – that is common to all governments since 1945 (1906? 1832?) – but its success in carrying out that intention and the sharp contrast between that highly effective success and its ideological support for a programme of privatization. No previous government has so successfully aggrandized the power of the state while simultaneously and loudly proclaiming its deepest wish to roll back its frontiers.

Speculation about the sources and outcomes of this grand political irony is out of place here. But there is room for some discussion of where this thrust towards centralized power leaves higher education. For there can be little doubt that the early 1980s will be regarded in the future as a decisive episode in the creation of a tightly coordinated system of higher education under strict national direction. Previous governments have talked about a national system, but more as an administrative ambition than as an established political fact: Sir Keith Joseph however is the first secretary of state with the power to set a national policy. There is no mystery about his exceptional power: it is simply that where his predecessors could only dangle a carrot he can wield a stick because of the cuts and the stick is mightily more effective than the carrot.

Some see Sir Keith's new power as a sinister and unprecedented development. They fear it is part of a creeping authoritarianism designed to overawe intellectual dissent. Some recent decisions by the secretary of state, in which he has confused his constitutional authority with his private prejudices, have given a superficial plausibility to this interpretation. But his out-of-joint views about academic tenure, his maverick vendetta against the Polytechnic of North London, and his hostile scepticism about social science are really the exceptions that prove the rule – and the rule is the powerful apolitical bureaucratic momentum that seeks to subordinate the private preoccupations of higher education to the public ambitions of the state.

For, far from being unprecedented, Sir Keith's new position of commanding influence over higher education is simply the culmination of more than 30 years of effort by successive governments to obtain some effective leverage over the future shape of the system. The aim has always been the same: to make higher education more relevant to the conditions of modern society, which in practice has nearly always been interpreted as the further expansion of science and technology. This is a common thread that runs from the 1956 White Paper on technical education through the Robbins report in 1963, the establishment of the binary policy two years later, the creeping dirigisme of the 1970s, the 1981 university cuts, the creation of the National Advisory Body, to Sir Keith's most recent letters to the chairman of the University Grants Committee and the NAB.

If the aim remained constant, the strategy has been constantly adapted. Up to the Robbins climax governments seemed to believe that the carrot of expansion provided it was juicy enough would do the trick. Money would breed modernization. The big push for expansion on a wide front would produce the necessary increase in higher education's commitment to science and technology. After 1965 governments became more sceptical. Although there was still remarkably little detailed interference in how higher education spent its money and decided its priorities, the new Crosland policy did provide a broad steer to the system by imposing on it a primitive stratification. Since 1981 a third strategy has come to the the front. The rather crude institutional stratification embodied in the binary policy is being superseded by much finer-grain programmatic discrimination; "new blood" and information technology are the best examples of the latter.

So quite suddenly Sir Keith has solved the problem that defeated nearly all his predecessors, how to create a national policy for higher education and how to make it stick. The present cuts and the prospect of future contraction have provided him with the political muscle that previous secretaries of state did not possess, and at the same time the cumulative experience of creeping dirigisme has provided him with the necessary administrative tools. A secretary of state who can wield a big stick and also has at his disposal the delicate scalpel of highly specific discriminatory programmes like "new blood" and information technology is a commanding figure in higher education policy.

But if one great question has suddenly been solved – how does the Government get its way in higher education? – another just as great has succeeded it – what are the effective limits of central power in higher education? The "new blood" programme is a good example of this new dilemma. In political terms it is certainly a very discriminating tool, but in academic terms it has been exposed as a rather blunt instrument. National agencies, even the UGC with its especially intimate knowledge of and *rapport* with the universities, can never accumulate the detailed knowledge required to make such programmes fully effective. The danger with detailed programmatic intervention is simply that while it certainly "works" in the sense that things move visibly and quickly it may not "work" in the more specific sense of meeting the desired objectives, in the case of "new blood" bringing new academic talent into the universities.

Perhaps as Sir Keith ponders his new dilemma and policy makers in higher education address this new and unfamiliar question, he and they should recall something written by Sir Karl Popper in *The Poverty of Historicism*.

> The difficulty of combining holistic planning with scientific methods is still more fundamental than has so far been indicated. The holistic planner overlooks the fact that it is easy to centralize power but impossible to centralize all knowledge which is distributed over many individual minds, and whose centralization would be necessary for the wise wielding of centralized power. But this fact has far-reaching consequences. Unable to ascertain what is in the minds of many individuals, he must try to simplify his problem by eliminating individual differences: he must try to control and stereotype interests and beliefs by education and propaganda. But this attempt to exercise power over minds must destroy the last possibility of finding out what people really think, for it is clearly incompatible with the free expression of thought, especially of critical thought. Ultimately, it must destroy knowledge; and the greater the gain in power, the greater will be the loss of knowledge.

Popper's account of the dangers of centralized power has double significance for the particular situation that we have been discussing. First, it heightens the grand irony of Mrs Thatcher's Government which has so effectively aggrandized the power of the state while proclaiming its horror of just such a movement. For Sir Keith Joseph's political philosophy is coloured by just such Popperian fears of state worship. Second, Popper's belief that centralized power destroys free knowledge must be especially keenly felt in higher education because knowledge is its product and it should offer a safe home for critical thought. Here perhaps there may be some substance to fears of a Tory offensive against intellectual dissent. For what from the top of the system can appear nothing more than a sensible administrative policy may seem at the bottom a deadly ideological assault. So we arrive at Popper's nightmare.

The great and the good

This is the season for honorary degrees, once a timeless academic ritual that provoked barely a ripple of interest but today a potentially explosive activity often accompanied by controversy and even protest. Who gets honorary degrees has become a much more sensitive issue, as universities have begun to use such awards to beam powerful messages about their modernity and relevance to the world outside and as their internal critics have increasingly abandoned former habits of deference towards the great and the good – or, as they probably see it, the great but not so good.

The controversy surrounding the award of an honorary degree to President Reagan at University College Galway on his recent visit to Ireland is just the latest if most dramatic example of this swelling sensitivity. The decision last year by the Royal Society to make the Prime Minister a fellow provoked similar dissent.

This disturbing phenomenon will probably provoke two contrasting reactions. The first will literally be a reaction against the rather more active use to which universities have put the award of honorary degrees in recent years. For it will be to underline the traditional argument that honorary degrees must rest on a secure consensus and that the slightest whiff of active controversy (as opposed to silent disapproval) undermines the fundamental principle on which the awards are made, which is that the recipients are accepted as worthy of these honours by general approbation.

The difficulty is that in our more contested age when deference is in decline this traditional approach is a recipe for blandness. At the best blandness will be boring and at the worst it may shade off into mediocrity, because those with significant talent and achievement have often provoked controversy. If the award of honorary degrees becomes entirely obscured by a cloud of blandness, the process itself may soon not seem worth the trouble.

The second reaction will probably be more robust. It will be to accept that it is right for universities to make more active use of honorary degrees, to represent symbolically their shifting priorities, and even that the occasional outburst of dissent is a healthy sign, a symptom that the process is no longer dismissed as lifeless ritual. For there can be no doubt that many universities have changed their approach to honorary degrees. No longer are such awards dominated by academic piety, to the four cities of a university's formal gratitude to its own scholars, or the reiteration of its stake in the national or international community of scholars and scientists by recognizing the achievements of the multinational academic superstars. Today a university is just as likely to use honorary degrees to reflect its interest in "sunrise" industries or to underline its commitment to its local community. So we have the Clive Sinclairs and the Bob Paisleys.

This more positive approach to the award of honorary degrees deserves to be encouraged. But more active policies call for more active procedures. So long as the choice was confined to the obvious or the bland and the guiding principle was academic piety it probably did not matter that the actual selection resembled a papal election. Now that universities have begun to award honorary degrees to more interesting and so more controversial people and academic piety has been relegated to one among several criteria, it is probably necessary for the selection process to be opened up. Not only does there need to be active, and public, debate about the new criteria which universities wish to apply to such awards, but the suggestion and the selection of the lucky winners should become a less papal and a more participatory procedure.

Laurie Taylor

"Dear Dr Phelps, thank you for your letter of March 3 inviting me to take part in the International Seminar on Linguistics to be held in Wrexham this September. I would indeed be prepared to act as rapporteur for the session on *Sign and Symbol: the Saussurean Legacy*. Perhaps you could let me know if any funds are available for travel and accommodation as this university no longer makes grants for such matters and my own possibility of contributing has been somewhat undermined by the department's recent decision to implement a one-term-a-year-without-pay policy for all lecturers under the age of 45. I look forward to hearing from you. Yours, G. Qunitock. (PhD)."

Lapping ticked the bottom of the letter and wrote AUB in big red letters under Quintock's signature. That was easy enough. AUB (Acceptable University Business) simply meant that Quintock was entitled to use departmental notepaper and a university envelope for this piece of correspondence. The question of who paid for the stamp was trickier. True, there was some slight possibility of favourable publicity accruing to the department if Quintock spoke at Wrexham but he had after all been invited only as rapporteur: a role typically reserved for academic dum-dums who had some professional standing but were thought too inept to be able to handle a full paper.

That certainly didn't suggest first class postage. Neither was the conference venue exactly a recommendation. Wrexham for all its undoubted cultural attractions was hardly a mecca for linguistic researchers. He briskly wrote POP (Pay Own Postage) on the envelope and turned to the next in the stack.

"Dear Brigadier Gore, I hereby apply for your one-year NATO fellowship as advertised in the recent edition of *The Times Higher Education Supplement*. Although I am by training a specialist in early English vowel shifts, I have always taken a considerable interest in matters of defence and weaponry and was for several years a member of the Sutton Coldfield section of the Territorial Army. Indeed, I have it on good authority that I might have been called for active service in Suez had the conflict not been so prematurely terminated. You will appreciate that it is difficult for me to specify the precise area of research to which I would specialize but the two topics which stand out from your list are 'Advances in Tank Technology' and 'Recent Developments in Nuclear Fall-Out Shelters'. Finally, I should say that I am available to commence employment from next Monday morning. Yours, P. Winkler (Emeritus Senior Lecturer)."

Poor Winkler. One could hardly envisage a man who had so far failed to grasp that instructions on the side of the Automat tea machine making a major contribution to tank technology. But still, a job was a job. Reluctantly Lapping wrote NUB (Not University Business) under the signature and POP in the top right hand corner of the envelope.

He paused from his labours and melancholically looked out across the former university playing fields where even now the first springs of the new potato crop were beginning to show above the brown earth. Away to his left he could see the Chancellor beginning his lunchtime shift on the Wexler's Hot Dog stall and behind him the familiar figure of the Professor of Applied Economics with his tray of lottery tickets. It was going to be a cruel spring. A cold uncompassionate materialist climate. With a wry smile at his own sentimentality he slid a tenpenny stamp from his wallet and stuck it gently over the POP on Winkler's letter. – *First published on March 7, 1980.*

The Times Higher Education Supplement

June 22, 1984 No 607 Price 60p

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UGC says 'no' to breakaway Scots

by Olga Wojtas
Scottish Correspondent

The University Grants Committee has turned down an urgent request by the eight Scottish universities to set up a mini-UGC for Scotland.

The universities had asked for a separate Scottish subcommittee partly to stop the Scottish universities being left out in the cold as the UGC and the National Advisory Body in England come together to plan the future of higher education, and partly to head off the threat of a transfer from UGC to Scottish Office funding.

The UGC's negative reply will reinforce speculation that ministers are seriously considering such a transfer, which has already been fuelled by the surprisingly wide terms of reference given to the new Scottish Tertiary Education Advisory Council.

The STEAC has been asked to review the funding of and relations between the universities and the rest of Scottish higher education. In contrast six years ago at the peak of the enthusiasm for devolution the special relationship of the Scottish universities with the UGC and the Department of Educaiton and Science in London was safeguarded.

The request for a subcommittee was made three months ago, and the UGC has obviously delayed its reply until the announcement from the Secretary of State for Scotland setting up the STEAC. The Scottish Office needed the agreement of the Department of Education and Science to include the universities in the council's brief, and it is highly likely the UGC was also involved.

Had the UGC set up a Scottish subcommittee, it could have been seen as emphasizing its claims on the Scottish universities, and potentially embarrassing the Scottish Secretary, Mr George Younger.

In a letter to Sir Alwyn Williams, principal of Glasgow University and chairman of the ad hoc group calling for the subcommittee, UGC chairman Sir Peter Swinnerton-Dyer said members were reluctant "to take an irrevocable step at a time when the situation is so fluid and unclear."

He added that a good working relationship across the binary line would be as necessary in Scotland as in the rest of the UK, "but how it is implemented will depend very much on the purpose and mode of functioning of STEAC."

Sir Alwyn said STEAC's new remit could enable it to turn into a MacNAB, the equivalent of the National Advisory Body south of the border, which has financial powers. "If this is so, the need for a Scottish subcommittee would diminish greatly."

The Scottish universities had proposed a subcommittee because of Secretary of State for Education and Science Sir Keith Joseph's advice that the NAB and the UGC should discuss the distribution of higher education resources.

The proposed functions of the Scottish subcommittee were to fill the gap created by Sir Keith, reviewing the scope for cooperation among higher education institutions, and liaising with STEAC and the Scottish Education Department.

The principal of Edinburgh University, Dr John Burnett, said all the universities would be disappointed that the subcommittee had not been established. But they had recently taken the major step of setting up their own standing committee which could at any time give views to the UGC, STEAC and the SED.

Merger talks between Stirling University and Paisley College have been dropped as a result of STEAC being set up.

Mr John Oswald, Paisley's registrar, said: "We haven't abandoned Stirling totally, but it's not the only option with STEAC stirring the pot round again."

The first meeting of a joint working party of Scotland's higher education unions has condemned STEAC as unrepresentative.

The Association of University Teachers (Scotland), the Association of Lecturers in Scottish Central Institutions, and the Association of Lecturers in Colleges of Education in Scotland say that having all STEAC's members appointed by the Scottish Secretary means they will "reflect the same political values and educational prejudices as the present government".

APT may go to court over pay arbitration

by David Jobbins

The courts may be asked to rule that a non-TUC union's pay claim should be considered in arbitration agreed this week for college lecturers.

Although it was outvoted this week when the Burnham further education committee was asked whether its claim should form part of the terms of reference for arbitration, the Association of Polytechnic Teachers says it will use all procedures possible to achieve its aim.

The committee agreed on terms of reference for arbitration which take into account the claim for a "substantial" but never publicly quantified claim by the teachers' panel, the management's response and the provisional agreement of 4 per cent and £300 for staff on the top point of the Lecturer 1 scale reached on April 16.

Mr Peter Dawson, general secretary of the main union, the National Association of Teachers in Further and Higher Education, confirmed this week that the union would press its original full claim which also includes automatic transfer from the L1 to the L2 scale.

It is this which angers the APT. Its national secretary, Dr Tony Pointon, said: "We do not intend to relinquish our role in putting forward the case of higher education lecturers".

APT's first step is to try to get a sympathetic person included on the three-member arbitration panel. If this fails it will seek to convince the independent chairman of the arbitrators that its case should be heard. If both steps fail it will then seek a judicial review.

APT has claimed 12 to 15 per cent to achieve parity with the universities.

University manual workers' leaders were this week claiming a key victory in the battle for a move to eradicate low pay.

A return to work formula for 400 members of the Transport and General Workers Union at Warwick University, who stopped work when colleagues were suspended for taking disruptive industrial action, includes a commitment from the university to use its best endeavours to ensure the national negotiating machinery addresses itself to the low pay problem in the near future. Vice chancellor Mr Jack Butterworth chairs the consortium.

Union courses in funds crisis

The Trades Union Congress is having to bail out its trade union education programme because of delays in reaching agreement with ministers over its annual grant.

More than two months into the financial year, there are still no signs of an early deal and there is considerable anxiety for courses for trade unionists in the autumn term.

Planning for these courses is taking place – but if the Government were to implement a threat it has made in the past and not make funds available they may have to be abandoned. The TUC last year received £1.7m from the Government and it is unlikely that it will be able to sustain the programme from its own resources for the remainder of 1984/85.

Senior TUC figures maintain they are not yet unduly worried by the delay but the Workers' Education Association, which provides about 20 per cent of the TUC's regional programme, fears that the end of mass provision through the TUC is a growing reality.

A survey of the 1982/83 programme, the latest for which figures are available, published in the summer issue of Trade Union Studies Journal paints a picture of rapid decline. Student hours for all courses have fallen by 11 per cent on the previous year, day release hours by 16.7 per cent, health and safety course numbers by 25 per cent, and for all day release courses by 17 per cent.

The total number of TUC courses fell below 2000 for the first time since 1976/77 when the explosion of provision was triggered by the first injection of public money and new demands for work place representatives were being created by legislation such as the Health and Safety at Work Act.

The TUC believes that demand is falling because most health and safety representatives have attended courses now and that employers are resisting releasing employees.

Other factors for the decline are uncertainty over public funding in recent years, growing levels of unemployment, employer resistance, the reluctance of employees to ask for time off – which WEA attributes to the psychological effects of the recession – and pressures from fellow workers not to take time off.

Research assist-ants: Dr John Whittaker of Lancaster University marshals the army of ants his team has recruited to help measure insect damage to trees. The ants remove aphids and caterpillars from foliage, and controlling their access to trees reveals the injuries their insect prey can inflict when unmolested.

A typical ants nest harbours around 250,000 ants, and the study suggests they can remove 100,000 aphids from an acre of woodland in an hour.

continued on page 3

Scientists try for share of defence cash

by Jon Turney
Science Correspondent

Efforts to make Britain's £2,000m defence research budget benefit university scientists are going ahead, civil science advisers told MPs this week.

Sir David Phillips, chairman of the Advisory Board for the Research Councils, said he had held talks with the Ministry of Defence's chief scientific adviser, Professor Richad Norman, on the role of the ministry in supporting university research and on the possibility of using some MoD funds to back other basic research.

He was speaking at the first meeting of the House of Commons Select Committee on Education, Science and the Arts to inquire into the science budget. Sir David and other ABRC members said the talks with the MoD were taking place against a background of a possible 25 per cent cut in Government support for basic and strategic research within 10 years.

Sir David, Dr Walter Bodmer director of the Imperial Cancer Research Fund laboratories, and Dr Derek Roberts, research director of GEC, all expressed dismay at the neglect of science in the Government's recent green paper on public spending in the 1990s. Departments which support research are all assumed to receive 'near level funding, and Sir David said this meant the erosion of science spending would grow worse, "unless a conscious policy decision is made to look at the strength and health of British science".

continued on page 3

Academy defends its record

by Paul Flather

The British Academy this week denied charges that it had failed to fulfil its duty to defend the arts from Government attacks and that it is run in a thoroughly undemocratic fashion.

The charges were made in a letter to *The Guardian* from Professor Michael Dummett, Wykeham professor of logic at Oxford University, who has just resigned as a fellow of the academy because it was "unequal to the challenge of the first real crisis it had ever had to face".

Sir Owen Chadwick, president of the BA, this week regretted the resignation of Professor Dummett, whom he described as a fine philosopher, but he said the academy was not in the business of saying 'boo' or 'yea' to ministers.

He defended the increasingly public stances taken by the academy in recent years, intervening in the "new blood" debate over university posts, administering humanities postgraduate awards, and making a public defence of the arts in its reply to the University Grants Committee.

In that statement, which was widely publicized, the academy warned the UGC against the low morale of those between what the Government intended for the arts and what it is believed to intend. "What is now needed is a reassertion of the values and importance of arts subjects," it said.

It emerged this week that Sir Keith Joseph, the Secretary of State for Education, will be addressing fellows of the academy on this very topic after their annual meeting on July 12.

Sir Owen revealed that another academy fellow had also expressed concern about the plight of the arts in general but that he was not the kind to resign and write open letters. He said there was ample scope to raise such issues in the 16 subject sections of the academy, and to make representations to the academy's governing council.

letters to the editor

After sales for foreign students

Sir, – Your leader of June 15, "Home thoughts from abroad", gave very positive coverage of the new-image British Council and drew particular attention to the council's initiatives as a paid recruitment agency for overseas students.

The council is no doubt to be applauded for its entrepreneurial approach to current diplomacy in the face of "swingeing cuts". Furthermore, Sir John Burgh's statement that the first goal of the scheme would be to regain Britain's share of the total of overseas students can only be applauded by those who are aware of the ideological, educational, diplomatic and trade benefits of international educational exchange.

UKCOSA, the national representative body concerned with the interests of overseas students in the UK, was at pains to warn the Government of the likely effects of the introduction of full cost fees on the enrolment of foreign students. Our predictions were justified, hence the need to recruit. But this recruitment is taking place in a financial context which means that overseas students' fees represent a subsidy to institutions' overall costs. The more overseas students are seen as a financial commodity, the greater the danger that we will recruit the wrong students to the wrong courses for the wrong reasons. Equally worrying is the lack of attention frequently paid by institutions to the academic, social and welfare support provided to overseas students. The "swingeing cuts" suffered by the British Council have also been suffered by the education world at large and in many institutions one of the first victims is student support services. There is no doubt that the best advertisement for British education overseas is satisfied customers. Equally, the fostering of goodwill and positive international relations depends primarily upon the quality of the experience of the overseas students.

Responsible and mutually beneficial recruitment must, therefore, take into account the special needs of overseas students, ranging from appropriate and realistic pre-arrival information to special study skills and English language programmes. Equally, the staff of institutions need to be professionally equipped to receive the new contingent of overseas students. From our experience as consultants to institutions wishing to improve their services to overseas students, UKCOSA is far from satisfied that these issues are taken into account sufficiently when the pressure is on for colleges to recruit for financial reasons.

Ultimately, however good a selling job the British Council is able to do, it will be the after sales service that counts.

Yours faithfully,
GAIL TAYLOR,
Executive Secretary,
United Kingdom Council for Overseas Student Affairs.

The coal face at Castlehill mine in Fife where inactivity during the strike caused the power supports to be crushed.

Yeats errors

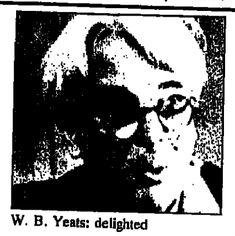
Sir, – May I take this opportunity to thank Professor Denis Donoghue for pointing out in his review of my *The Poems of W. B. Yeats, a New Edition* (*THES*, June 8) the omission of "the" from the first line of "A Bronze Head"? The proper reading is "Here at right of the entrance of this bronze head", and I shall hope to have this proofreading error corrected in future printings of both the English and the American editions.

As for the other textual "disasters" cited by Professor Donoghue – the omission of the title and opening lines of "The Living Beauty" and the repeated line and improper stanza division in Part I of "The Tower" – these were somehow made after I had passed the final proofs and are unique to the English text. The American edition, published last December and printed from film provided by Macmillan, London, is correct in both instances.

Professor Donoghue's other doubts about *The Poems of W. B. Yeats, a New Edition* – the removal of "Three Songs to the Same Tune" to the Appendix and the use of the *Collected Poems* format of lyrical and narrative and dramatic verse – are complex matters which cannot be discussed in these columns. On the question of the proper format, I would only say that the single recorded statement by *Yeats* (rather than Mrs Yeats, Harold Macmillan, Thomas Mark, or whomever) expresses delight with the two-part format; and that in 1938 he intended to publish an elaborate and limited edition of his collected works in America using that same arrangement.

Finally, Professor Donoghue has Yeats dying three days in advance of his demise (January 28, 1939).

Sincerely,
RICHARD J. FINNERAN,
English department,
Newcomb College,
New Orleans.



W. B. Yeats: delighted

Harassment

Sir, – Thank you for your balanced, unhysterical report of the Oxford University sexual harassment survey (*THES*, May 25). Your reporter notes that the Oxford definition of harassment was "strict", pointing out that a previous survey at Harvard defined all sexual relations between staff and students as harassment: since this possibility makes many otherwise sympathetic colleagues reluctant to take action on the issue as a whole, it seems worth explaining why the Oxford University Students' Union did not favour the Harvard definition.

Without necessarily feeling that to have an affair with a student is acceptable professional behaviour, the OUSU wanted to make a definite distinction between consensual and non-consensual incidents on two grounds. First, we felt it was important to avoid confusion between sexual harassment and sex per se. There is nothing romantic and very little sexual about harassment; it is about the abuse of power. Second, what makes the behaviour of a tutor unacceptable is its coercive nature, the fact that it is forced on a student against her will. To define sexual harassment without taking into account women's feelings about it negates the very principle the OUSU is trying to establish: that women's views on what is and is not proper treatment in higher education must be made to count.

The report is available from Oxford Students' Union, price £1.

Yours faithfully,
DEBORAH CAMERON,
Co-author of the OUSU women's committee report,
107 Arthur Road, London SW19.

Patent power

Sir, – The Committee of Vice Chancellors and Principals (*THES*, June 8) appear to consider that patenting of monoclonal antibodies at an early stage would have "serious disadvantages for generations of investigators". Has this august body not considered that the loss of such valuable intellectual property to Britain has serious disadvantages to the industry of this country with a resultant loss of national wealth? Is there not a connexion between Britain's failure to capitalize on its intellectual wealth and the current shortage of money for investment in the educational system?

The financial loss to Britain from failure to patent monoclonal antibody production techniques must run into tens, if not hundreds of millions of pounds.

Few would disagree that overzealous patenting should be a matter of concern: but there is no need for this to occur. If a sensible approach is taken by all sides, the final result can be very beneficial.

Yours faithfully,
PETER B BAKER,
9 Kenilworth Road,
London W5.

Real doctors

Sir, – The debate is not new, but for me it came to an end during a comically acrimonious lunch-time discussion about titles at Sydney University in the late 1950s, when a distinguished anthropologist objected to a colleague: "You sir, are a medical practitioner and I am a doctor".

Yours faithfully,
GEOFFREY LARMINIE,
Lane End, Lane's End, Tring, Herts.

Copy debate

Sir, – The answer to John Watson's query concerning student photocopying (*THES*, June 15) may be that, from the students' point of view, copying has a number of advantages. It may be more convenient and cost effective to copy relevant portions of a book or journal than to purchase the entire work or to make notes from a copy obtained from a library, particularly when the volume may not be removed from the library.

The introduction of short term loan collections in academic libraries has to some extent improved the availability of heavily used books, but I doubt whether many students buy no books whatsoever simply because it is possible to photocopy. Postgraduate students rather than undergraduates are responsible for a considerable amount of library photocopying. Incidentally, it is not only published or copyright material which is copied.

Had photocopiers been available when I was an undergraduate I am sure that I would have made use of them.

Yours sincerely,
D. E. LEWIS,
Senior assistant librarian,
Loughborough University.

PCL rector

Sir, – You reported last week the appointment of Terry Burlin as the new rector of the Polytechnic of Central London. He has been the acting rector for two years, and over that period has demonstrated his firmness and his approachability at a time when difficulties both externally and internally generated have beset PCL. I am not surprised that the governors felt able to offer him the rectorship, even in the face of competition that was both powerful and attractive.

You are wrong to say, however, that the Inner London Education Authority had blocked his appointment, or sought to back another candidate. The seven ILEA nominees on the court of governors were not mandated. The ILEA had been represented at the shortlisting and had then made it clear that either of the two candidates selected for the final interview would in its view be worthy appointments. In fact, the ILEA governors did not, I understand, vote uniformly, nor were they asked to. They followed their own judgment, as presumably did the other governors present at the selection meeting. The ILEA effectively backed both candidates but left the decision quite properly to the governing body.

In the circumstances, I ought to give a public and sincere congratulation to the new rector.

Yours faithfully,
NEIL FLETCHER,
Chair,
ILEA Further and Higher Education Sub-Committee.

Letters for publication should arrive by Tuesday morning. They should be as short as possible and written on one side of the paper. The editor reserves the right to cut or amend them if necessary.

Poly mining courses

Sir, – The National Advisory Board for local authority higher education has always maintained a commitment to open government. This was expressed most recently by John Bevan, the NAB secretary, at the National Association of Teachers in Further and Higher Education annual conference in May. Yet the manner in which the provision of advanced mining courses has been considered by the NAB has fallen short of this ideal.

Though the three institutions involved were circulated in February with a document concerning mining courses, and a request for their comments, no further information was received. An extensive and detailed case was presented by Trent Polytechnic in support of retention of its mining courses. It was with shocked disbelief that the polytechnic learned, after the event, that a NAB report dated May 1 was considered by the NAB board on May 22, which contemplated closure of all mining courses at Trent. If it was not for the intervention of Natfhe, seconded by the Confederation of British Industry, to defer the decision for two months, then the department of mining here could have been excised without any knowledge that it was on trial, or of the case against it.

When the NAB report is examined, the reasons why secrecy is the first defence of central administrators become clear. The report is based almost entirely upon the views of the National Coal Board. The NCB is an august institution, but it is not an educational body. The essence of the argument against Trent is that its students face placement problems and difficulty finding employment once qualified. Both of these statements are untrue. Area management of the NCB has always been keen to provide placements for Trent students, and consequently the students have found employment with a wide range of employers in extractive industries, home and overseas.

In fact Trent has comparatively healthy recruitment on all its advanced mining courses, and an unparalleled success rate in professional mining examinations. The NCB as the major employer in the mining industry seems to be assuming the right to determine the number and the location of mining courses, when other employers are highly satisfied with Trent.

Moreover the case of the NCB seems misconceived. If the real thrust of the MacGregor plan is to expand production in automated pits, and higher technicians in mining will be required not fewer, and the proper references made to their medium-term needs are misplaced. Natfhe will accept course closures in mining on the same basis that the National Union of Mineworkers will accept pit closures on the grounds of exhaustion. We will not accept, and we will energetically resist, course closures based on economic criteria which have been arbitrarily and temporarily adjusted.

The sole consistent principle of educational worth espoused by the Government is that of "industrial relevance." What could be more relevant than mining, which is the largest employer in this part of the country? It must be hoped that at the NAB meeting in July, good sense will prevail and advanced mining provision continued at all three institutions currently engaged in this work.

Yours sincerely,
TOM CLARKE,
Branch Secretary,
Trent Polytechnic Natfhe.

Antisemitism

Sir, – It was, of course, no part of my argument that anyone who criticizes Israeli policies is *eo ipso* an antisemite (Letter from Neil Roberts, *THES*, June 15). It was part of my case that decreasing sympathy for Israel provides an opportunity to those whose antisemitism has been inhibited since 1945 to rehabilitate their beliefs. In so far as the level of antisemitism in both Western and Eastern countries is now to some degree a reflection of events in the Middle East, I conclude that we are witnessing a phenomenon different from the traditional antisemitism of the right.

Since the reactions in Europe to the Sabra and Chatilla massacres included the attack on Goldenberg's restaurant in Paris and the bomb outrage outside the Rome synagogue, Mr Robert's confidence that no Jew need go in fear for his safety because of criticism of Israel is sadly misplaced.

Yours sincerely,
PETER PULZER,
Christ Church,
Oxford.

More art

Sir, – May I correct a factual error by Karen Gold's article on Portsmouth Polytechnic (*THES*, June 15)?

The National Advisory Body permitted an *increase* in the intake to the BA in fine art at Winchester School of Art, not a decrease. For 1984/85 the roughly matched the decrease at Portsmouth Polytechnic, so keeping the advanced student numbers in art and design for Hampshire more or less constant.

The consortium now agreed by Hampshire County Council involves four colleges, Winchester School of Art, Portsmouth Polytechnic, Portsmouth College of Art, Design and Further Education and, itself newly formed by merger, Southampton Institute of Higher Education. It is a consortium for art, design and architecture with some 1,500 students in the three cities, and will seek to rationalize and foster new developments in all these disciplines.

Yours faithfully,
DAVID SHERLOCK,
Principal,
Winchester School of Art.

Sheffield decides to splash out

by John O'Leary

Sheffield University is to use up n third of its reserves in a £1.3m scheme to stimulate teaching and research, and compensate for cuts made in a variety of areas over recent years.

In what the university describes as its most exciting budget for years, plans have also been laid to generate more of its own income. Additional money has been allocated for alumni activities and overseas student recruitment and liaison, as well as to the university's Octagon conference centre.

Dr John Padley, the registrar, said he hoped the scheme would boost morale and would save the university money in future years. "We are very pleased that the council has decided to take such a bold step," he said. "The reserves have been held steady to be available if the worst of the cuts came upon us. Now that we have almost achieved our staffing targets, we will not need to use the reserves to bail us out."

He added that a rise in research grants from £4m to £6m a year, largely from the private sector, showed the potential to be tapped by such an initiative.

More than £700,000 is allocated to projects intended to be maintained on a recurrent basis, if financial circumstances permit. The remainder will be spent on once and for all projects, largely in repairs and maintenance.

An academic development fund is to be set up with £200,000 of the money, paving the way for new initiatives in teaching and research, and making provision for some additional temporary posts. The fund will also be used to enable hard-pressed departments to give academics study leave, to promote research developments and assist in retraining, staff exchanges and the granting of "refresher time" in industry or professional practice.

A further £200,000 will go to the library to bring expenditure on books up to the level recommended by the university's library committee. £150,000 will be used to supplement departmental grants, which have been eroded, or even lost.

Some £600,000 will be spent on three projects to carry out extensive maintenance work and repairs. A survey is being conducted to establish the university's needs to form the basis of a programme of planned preventive maintenance. Other areas to receive money from the scheme include computer maintenance, student counselling and the provision of part-time demonstrators and tutors.

Doubts cast on DATEC

by Karen Gold

The National Advisory's Body's art and design study group is questioning the viability of 17 college Design, Art and Technology courses.

The group has written to eight colleges and nine local authorities or regional advisory councils, asking for more information about the courses and whether they are not too isolated.

In every case the institution has only one DATEC course, according to the study group chairman and head of Newcastle Polytechnic's art and design faculty, Professor Tom Bromly.

The letters are part of the NAB's longer term strategy of questioning the viability of certain isolated courses, he said. The inspectorate has also been asked to report on some of the courses.

The letters to colleges say that the group has come to a provisional view on a particular course in view of its relative isolation from other art and design or advanced courses. It meets again next Tuesday, by which time all replies to the consultation are expected, to decide on recommendations on the courses' future.

Welsh course goes to Gwent

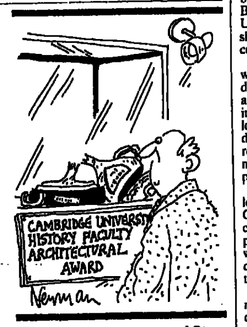
A new course in Welsh for training craft, designs and technology teachers will be located in Newport, an area of the country where Welsh is little spoken and no Welsh-medium practice schools for the student teachers exist.

The decision by Mr Nicholas Edwards, Welsh Secretary, to award the course to Gwent College of Higher Education follows months of argument. The Welsh HMI originally proposed Bangor Normal College but this was objected to as political favouritism for Welsh-speaking North Wales.

The Welsh Joint Education Committee then proposed Trinity College, Carmarthen, Wales's only voluntary college and with a strong Welsh character but located in the south-west. Finally the Wales Advisory Body recommended Gwent.

The conclusive argument was that the college was designated two years ago as a centre of excellence for CDT and it was thought that subject expertise was more important than cultural context.

TES



Emphysema gift

Edinburgh University has been bequeathed £1m by Mrs Norman Salvesen to further research into the causes and treatment of emphysema, holes in the lungs which lead to death through heart failure. The money will support Edinburgh's emphysema research fund, set up three years ago.

Sea storm hits Liverpool

by Jon Turney
Science Correspondent

Bangor and Southampton universities will receive extra cash to build up their oceanography departments, the University Grants Committee confirmed this week.

The decision follows an extensive review of the country's four oceanography departments by the UGC's physical science's sub-committee. Reaction from the two unlucky departments, at Swansea and Liverpool, was mixed. Swansea appears to accept the decision, but staff at Liverpool were furious at what they saw as a political choice.

The decision has come to be seen as a test of the UGC's skill in handling tricky decisions as well as the merits of the individual departments. The committee is sensitive to charges that earlier decisions on small subjects like Russian and pharmacy were poorly taken. It hoped that the elaborate review of oceanography, including visits to all four departments and assessments by eminent external referees, would command assent.

But a senior staff member at Liverpool said: "We have a considerable degree of eminence here which wasn't recognized. We were portrayed as third rate."

He believed the outcome of the review was fixed by political considerations before it began. The head of the Liverpool department will meet the university's vice-chancellor next week to discuss the department's future.

The UGC stresses that there will be more than £1m extra for the subject, to bring the two favoured departments up to 16 academic staff and to pay for new buildings at Southampton. Formally, the decision is also "without detriment" to the other two departments.

Swansea and Liverpool universities' budgets and student allocations will be unchanged. But the two departments believe that research contracts are bound to go to their richer brethren at Bangor and Southampton. And the UGC recommends that Swansea should no longer offer a single honours course in oceanography.

The main factor in the UGC choice was the quality of research in the four departments. On other criteria examined by the review group – including commitment of the institution, local facilities, interaction with other departments, and alternative use of resources – the group's report appear more finely balanced, with Swansea in particular scoring well.

The principal of the University College of Swansea, Professor Brian Clarkson, said the college would now consider a regrouping of science departments to enhance marine sciences without expanding oceanography. No decision had yet been taken on retention of the college's research vessel.

Sir Peter Swinnerton Dyer, chairman of the UGC, stressed that oceanography was an unusual subject, and that the committee was unlikely to conclude future rationalizations by spending more money. On pharmacy, the department at Heriot-Watt, which the UGC wanted to close, has now proposed a new, more industrially orientated course. The UGC is waiting to see if this will be accepted by the Pharmaceutical Society before considering the matter further.

St John's Lodge: part of Bedford College.

Bedford set to go Stateside

An American higher education college is set to take over the lease of the spectacular buildings in Regent's Park, London, which have been occupied by Bedford College since 1913.

Rockford College, a private institution based in Illinois, is now in advanced negotiations with the Crown Estate Commissioners over the 12-acre site which includes the Queen Mary rose gardens and a lake. It is thought the site will be used by a consortium of American colleges and universities as a London extension for their campuses.

Bedford has released its lease, with 26 years still to run, to the Commissioners for "about £7m" in line with its merger with Royal Holloway College on a 100-acre site in Egham, Surrey. The merger is part of London University's rationalization programme in the face of higher education cuts.

All funds raised from the sale of the lease will go towards the £14m building programme in progress at Egham to house new departments and a larger new library. The rest of the money will come jointly from the University Grants Committee and the university.

Another £6m programme to build new student residences at Egham is being funded partly by the sale of Bedford's student hostels, which raised £2.4m, the sale of the St John's and Fraser lodges and from outside benefactions. Another asset, Tennyson Hall, comes on to the market at the end of the month.

About one-third of Bedford, which opened in Bedford Square in 1849 and moved to Regent's Park in 1913, has already moved to Egham. Four departments, geography, geology, psychology, and social policy, will remain in north London until next summer by when it is hoped the full merger will have been completed.

Meanwhile, talks between the two colleges to find a suitable new name are continuing. Two front runners, Queen's College and New College, are still being considered, although the trustees of RHC are concerned about losing the name of the generous benefactor of the college, Thomas Holloway. No decision on who should be principal has been reached.

Prison reply criticized

The Government has been severely criticized by a House of Commons committee for its "disappointing reply" to a report on prison education.

The Select Committee on Education, Science and Arts, then chaired by Mr Christopher Price, published a report on prison education in April 1983 to which the Government replied last January.

The Government rejected the main recommendations which called for legislation on the objectives and standards of prison regimes, including the right to education, and for the integration of prison education and training services.

This week, the committee, now chaired by Sir William Van Straubenzee, took the unusual step of publishing a second report which calls for a Parliamentary debate. The report said the committee found the Government's reply "highly unsatisfactory", "confusing" and "disappointing".

It claims that prison education departments are unable to operate effectively because of fundamental indecision about objectives. "The consequence for public expenditure is waste."

TES

Scientists try for share of defence cash

continued from front page

The MoD's chief scientific adviser is a member of the ABRC, but Sir David is understood to have held private talks with him and the department's head of procurement, Mr Colin Fielding. During the meeting, Sir David pointed out that in the United States major defence research establishments like the Lawrence Livermore laboratories make lasers accessible to university scientists for their own research.

The MoD replied that it would consider whether any similar facilities in Britain might be opened to researchers from outside defence establishments, and the ABRC is likely to press this point in the near future.

Defence money is already going into joint projects with civil researchers on advanced computers and opto-electronics, but university scientists believe there are other areas where access to MoD programmes would benefit basic research. These include oceanography and remote sensing. The department is also likely to issue guidelines soon to help universities who want to apply for contracts in MoD research schemes.

However, Dr Roberts told the select committee that he guessed only about one per cent of the £2,000m MoD research and development spending went on basic research, and the proportion had declined in recent years. He stressed the real need was for more money in the civil science budget.

Sir David made the same point in response to questions about proposals to reorganize the ABRC. He said his intention was to make the existing system work well rather than change it, and neither he nor Dr Roberts had much sympathy with recent suggestions from Sir Douglas Hague for reforms of the board.

Sir Douglas, chairman of the Economic and Social Research Council, criticized the ABRC's administrative style, and called for measures to create a "learning bureaucracy".

White Paper: Government will stand firm, warns Hancock

Colleges and local authorities have been warned by the permanent secretary at the Department of Education and Science to cooperate with the decisions announced in the White Paper *Training for Jobs* because the Government intended to stand firm.

Speaking at the Association of Colleges in Further and Higher Education meeting in Blackpool last week, Mr David Hancock said that as far as resources to the Manpower Service Commission were concerned, there was no prospect of turning back the clock.

"The White Paper announced a decision which will stand. We in the DES regard it as our job to help the MSC use their new powers to secure genuine improvement and avoid dislocation. But we cannot do this effectively without the active and willing help of the rest of the education service," Mr Hancock said.

Under the White Paper, funds and responsibility for a quarter of all non advanced further education is transferred to the MSC away from the local authorities. This has been vigorously opposed by both the local authority associations which were this week holding meetings after failing to meet the MSC to discuss proposals for implementation.

Mr Hancock pointed out that there was one quick remedy to criticisms being made about documents prepared by the MSC on the White Paper. Colleges and local authorities could put some input to these papers, for nothing would improve unless they cooperated. He stressed that although the question of funds was decided, consultation was open on the way *Training for Jobs* should be implemented.

He was surprised that, if there was dissatisfaction with proposals for the Area Manpower Boards to oversee the administration of the White Paper, local authorities had not proposed their own structure. "Achilles, after all, did not sleep in his tent."

Earlier Mr Hancock had spelt out some of his concerns and priorities regarding the White Paper. He identified priorities as relevant teaching experience by college staff, marketing capacity, balance of courses in relation to local needs, and the range, quality and technological specification of the equipment and software available.

He was concerned that in implementing the new funding arrangements, geographical balance should be maintained, so as to allow students to acquire qualifications in localities where no matching job opportunities existed. His second anxiety was that colleges' total course packages should not be harmed by the withdrawal or reduction of one course.

● The Association of Metropolitan Authorities decided this week to continue its total opposition to the White Paper and restated its recommendations to member authorities not to collaborate. The association will now go ahead with its own review.

DON'S DIARY

FRIDAY (Ideal)

Rose with the lark. Considered carefully notes for TV 15 before viewing, then spent worthwhile hour reconsidering the arguments presented. Breakfast and *The Times* crossword before starting to mark new batch of assignments. Sympathetic but positive criticism – this is the best method of encouraging students. Decide on some remedial exercises for a rather slow yet very keen student. Perhaps a telephone tutorial would be in order . . .

Working lunch. More assignments and a phone call from a student perplexed by the curiosities of Nelson Goodman's language. Spend nearly half an hour translating Goodman into everyday language until student withdraws satisfied.

Supper followed by my statutory two hours reading around the course material producing the bare bones of an informative lecture on Kandinsky for the next Day School. And so to bed with the warm glow that comes from a job well done.

(Actual)

"Teal it's your turn." "No it's not." "What! Ten o'clock? Oh well I bet the students didn't watch it either." What fresh hell is this awaiting on the doormat? Fifteen long envelopes bursting with words and forms, and crammed double in the letterbox a package marked DO NOT BEND. The phone rings. Pick up receiver and simultaneously tread barefoot in half-digested present from the cat. "Nelson who? Which assignment? Look, can I call you back in half an hour?" Make tea. Wash foot in kitchen sink. After frantic perusal of essay and Goodman text ring student. Twenty minutes later ring off in despair.

Spend most of day trying to do essay myself to put off having to start marking. Eventually pick out thinnest essay only to find handwriting indecipherable. Saved by the phone. "Devise a Day School programme? Certainly. Oh – you can't pay me for it – never mind. Or for the extra two hours you want me there? What about travelling expenses? . . . erm quite. Two p a mile sounds most generous."

Supper in front of box. Brain off. Large drink barely raised to lips when phone rings. It's nearly midnight dammit! A death in the family? "She won't give a name just repeats mysteriously 'one of Pat's OU students'." Rais! Resolve to use Summer School wages to purchase unplugable phone. "Yes it is late. Oh Sorry . . . your *assignment* is late. What! Both arms broken? Well in that case . . . Tomorrow? Fine." Step once more in cat's nauseous offering and so to bed.

WEDNESDAY (Dream)

Bright sunshine provoked an impromptu motoring visit to Kettle's Yard Gallery, Cambridge thronging with bicycling dons. Arts Council exhibition of contemporary photography quite exceptional – definitely Post-Modernist. Decide to take my students there on a guided tour. Lunch at *The Whim* – once picturesque now, alas, merely a *W(h?)impy*. Abandon dreaming spires in order to run through my note for tonight's tutorial on Expressionism. Great care must be taken in planning these sessions so that the weaker students benefit adequately from the discussion. Early supper then off to Bedford Study Centre. One hundred per cent turn out of students! Useful discussion about the contradictions within Expressionist theory and practice, followed by a brief sojourn in the convivial atmosphere of a nearby pub to round out the evening into a delightful blend of the academic and the social.

(Reality)

Rain sluicing down. Spouse's turn to use car. "I'll try to be home early but you know how faculty board drags on . . ." Fine. After all it only takes 30 minutes to get to Bedford. Spend day aquainting self with course material. Cat finds slides in paper bag irresistible. Well, that Picnsso slide wasn't too special anyway.

Put on dress and high heels in hope of appearing authoritative and grown-up to middle-aged students. Spouse late. Leap into car and speed towards Bedford. "Can't stop here miss, you're obstructing the roundabout." "Sorry officer I really didn't intend . . ." Athletic policeman semaphores to traffic and stares disdainfully while I push defunct automobile across roundabout. "Can't leave it there either." How many years in Siberia for strangling one of Her Majesty's servants? Manage to restart car. Slam door on soggy dress ripping the skirt. Arrive at Study Centre with three minutes to spare. Heating off. That's all right, I brought my own electric fire. Electricity off also. No heat, no light and no sign of a porter. Three out of fifteen students turn up. Adjourn to the pub and attempt to run the tutorial against a pandemonium of Heavy Metal. Are Goodman's concepts of "syntactic density" and "relative repleteness" relevant under these conditions? Retire defeated after one and a half hours. Valediction from one with brow villanously low who throws up over my feet in the pub doorway. "Thank you for coming. See you at the Day School."

SATURDAY (Reverie)

Breakfasted heartily in pleasurable anticipation of today's Day School. These events are always so stimulating for both tutor and student. Leisurely check through slides and notes.

Arrive at Cambridge Tech in time for brief coffee and social chat with students before getting down to business. Kandinsky lecture went really well – questions raised afterwards showed the students now approaching a deeper understanding of the Idealism inherent in *On the Spiritual in Art*. Colleague's lecture on Expression was a searching analysis of topic. Lunchtime spent sorting out student problems with project essay. Afternoon panel discussion on current television programme produced valuable and lively debate. Was warmly thanked by several students for such an informative and enjoyable day.

Utilized evening to rough out paper on Day School management for forthcoming Distance Teaching conference.

(Nightmare)

"That's never the time?" Miss mouth with tea. Swab notes. Scramble into jumper to hide stained shirt. Depart. Half way up road discover cat on lap. Return home. Deposit cat. Start again.

"Thank God you've arrived, there's been the most awful cock-up." No slide projectors. No key to storerooms. Coffee machine knackered and students near riot. "Erm . . . I'm afraid that the programme has been somewhat modified. We'll have to begin with the panel discussion. Can anyone get hold of a projector . . .?" Morning session rapidly degenerates into series of desperate interchanges between Ms Inaudible, Loud Tory Lady, Boring Old Fart and a self-proclaimed Artist.

"Sandwiches is orf." Liquid lunch. Local student resurrects antique family projector for afternoon session. "Ah . . . the quintessence of Kandinsky's idealism thus lies . . . Pardon?" "I said, excuse me but do you know that slide is ON FIRE." Damn. "There's an extinguisher in the corridor . . ." Colleague's spiel on Expression interminable. Students start leaving early. Puncture on way home. Why me Lord?

Pat Dillon

The author is part-time art history tutor, Open University, East Anglian Region.

Exam code alert at Aberdeen

by Olga Wojtas
Scottish Correspondent

There have been warnings in Aberdeen University's senate that an examination code of practice from the Committee of Vice Chancellors and Principals and internal draft guidelines could enable students to sue.

Aberdeen is unusual in having discussed the matter at senate level: most universities are still circulating the CVCP paper round the faculties.

Criticism of the documents was led by members of the law faculty, who said the status of the proposed requirements were too vague, and it was uncertain what the effect on departmental procedures would be were they accepted.

Aberdeen's principal, Professor George McNicol was a member of the CVCP academic standards committee which drew up the code of practice, and the internal guidelines, which is more detailed, was produced by Aberdeen's committee of principal, vice principals and deans.

The dean of the law faculty, Professor Alistair MacLeary, who is not himself a lawyer, said that when he presented the internal proposals to the faculty, "it was like throwing a live rabbit into a sackful of ferrets."

There was little opposition to the principles of either document, but the lawyers are arguing that in an increasingly litigious age, the effect and status of the guidelines must be clear.

Even although the spirit of the guidelines might be met, there was a danger that a student could appeal because a particular guideline was not followed, according to a submission from a number of law lecturers.

The internal document, for example, called for an equal distribution of marks between an upper and lower second class degree. Specific exceptions might not be the determining factor, it was said, but a student could properly appeal internally or even through the courts.

The CVCP document came under attack for not making it clear whether an external examiner had the final say in grading students.

The submission proposes that instead of a central code, the universities should set down general principles and objectives from which individual faculties could draw up their own codes of practice.

Professor McNicol, the vice principals and deans are now to put the revised proposals, and are expected to consult Professor Philip Lee of the conveyancing department in drawing them.

Clearer guidance urged on ultra vires cash

by David Jobbins

A Conservative backbench MP this week claimed that the Government was failing to brief students on their financial and legal liabilities for illegal payment of union funds to political causes including the miners' strike.

Mr Ivan Lawrence, MP for Burton, told the Commons this week that it was remarkable for money to continue to be voted by unions to striking miners, and to organizations such as the English Collective of Prostitutes.

"It is clear that the Attorney General is not doing enough to bring home to the leaders of student unions precisely what the state of their indebtedness will be if they carry on behaving as unlawfully as this," he said.

The Attorney General, Sir Michael Havers, who last year sent out fresh guidance to student unions on the issue of ultra vires payments, said that there was little more he could do other than to say that when cases were brought to his attention, a careful inquiry was made by the Treasury Solicitor.

The Treasury Solicitor is investigating a number of allegations of alleged ultra vires payments. Sir Michael assured MPs that he would take whatever action was appropriate to recover ultra vires payments including tracing money in the hands of any person who had wrongfully received it.

If any of the cases under investigation are substantinted, it is open to the Attorney General to consider taking legal action.

Of the cases under investigation, one is already effectively resolved. At University College, Cardiff, the union president has ruled that his deputy president and treasurer should not face the sack for refusing to sign a £1,000 cheque for the miners.

Another case under consideration is the University of Essex, where a number of alleged illegal payments were made.

Writers censure censors

by Paul Flather

A cultural and academic boycott of South Africa is an important way for the outside world to show it does not endorse *apartheid*. But it only works as a two-edged sword, writers banned writers said in London at the weekend.

Mr Breyten Breytenbach, the Afrikaans poet and novelist who spent seven years in prison under South Africa's Terrorism Act made a special plea for a boycott because any links, including the English rugby tour, construed as endorsing current policies.

Mr Sipho Sepamla, a black poet who works in a youth arts centre in a black township outside Johannesburg, said white foreigners continued to "legitimise the regime. But it was "an agonising issue" as black youngsters needed the stimulation brought by exchange of ideas.

Earlier both writers had told an audience of 200 how the censorship operate in South Africa as part of a two-day conference organized by the Index on Censorship to highlight the worldwide persecution of writers and the Institute of Contemporary Arts.

Mr George Theiner, editor of Index, opened the conference saying some 500 poets, novelists, and writers were currently in prison or labour camps around the world.

The conference coincided with the publication of an anthology of 10 years of writings from Index under the title *They Shoot Writers, Don't They?* with pieces by André Brink, Milan Kundera, Tom Stoppard and Kurt Vonegut.

Mr Sepamla said declining standards of education as produced by the Bantu Education Act had done even more damage to the work of black writers than the two censorship acts of 1963 and 1974.

He doubted if universities could become the breeding ground for a new generation of black writers because the black universities were so deprived and blacks at white universities could not read subjects such as English or history.

Another session dealt with erotica, censorship in Britain, particularly pornography and erotic literature being seized by the Customs and Excise. Publisher Mr John Calder said the Government today was "anti-culture, anti-education and aginst the extension of freedom."

They Shoot Writers, Don't They?, edited by George Theiner, published by Faber and Faber, price £3.50.

Sarah Taylor, a three dimensional design student at Manchester Polytechnic, reflects the stylized posture of the mannequins which inspired the ceramic torsos which have become her main fascination. Sarah, 23, is specializing in ceramics for her degree, and her work emphasizes the curves and flow movements of the body.

Younger challenged over staff development

The National Committee for the Inservice Training of Teachers has challenged the Secretary of State for Scotland to provide more resources for staff development.

This is despite the warning from Scottish Secretary Mr George Younger, when he reconstituted the advisory committee three years ago, that there could be no question of additional resources.

The national committee has now produced two complementary reports, one on the staff development of teachers, and one on implementing a three-tier system of awards for service courses, with the first leading to a new phase or path. It suggests a move away from a deficit model in which teachers are seen as needing staff development because they lack certain professional skills."

The committee advises that each education authority should plan, supervise and evaluate its staff development policy, but adds that there is still a need for a body such as the national committee to take a nationwide view.

Education authorities should consider creating a reserve of teachers to support a planned programme of staff development, covering for staff who are ill or on inservice courses. Its recommendations are not binding.

asked to comment by October.

Present arrangements for staff development are insufficient and unsystematic, says the committee, with only 2.6 per cent of staff attending courses leading to an award in 1981/82, with fewer than half of those able to take the courses wholly in school time.

It believes that staff development should be continuous, maintaining teachers' professional competence at the highest possible level throughout their career.

"This implies that teachers need regular refreshment and retraining whether their careers are advancing, in new phase or not," it suggests a move

'Cafeteria' degrees could be on the menu by next year

by Maggie Richards

A plan to introduce cafeteria-style degree courses, permitting students to split their studies between various higher education institutions, has received the blessing of a top-level academic committee of the Council for National Academic Awards.

The proposal, for a five-year experiment initially operating in London's universities and polytechnics and with the cooperation of the Open University, will now go forward to the full council of the CNAA for a final decision on July 10.

The scheme has also won the backing of all the major higher education institutions in the London region, including London University, following a two-and-a-half-hour consultative meeting between all the interested parties.

A report of these discussions was placed before the CNAA's academic policy committee, which last week voiced its support for the plan.

If the venture is approved by the full council, work will start immediately to put the scheme into operation in time for the beginning of the 1985/86 academic year.

Under the terms of the plan students would register with the CNAA, acting as the central admissions body, and be allowed to split their studies between several institutions. This has raised the problem of grant allocation as, at present, awards are made for study at a specific institution.

But if the scheme is sanctioned on July 10, the CNAA is hoping to instigate talks with the hoping to instigate talks with the Department of Education and Science to overcome this hurdle.

For the moment it is envisaged that only mature students – classified by the CNAA as those aged 21 and over – will be accepted onto the split degree scheme. The CNAA had initially estimated numbers of students would vary between 500 and 1,000 each year, but in the consultative discussions with institutions it became clear that academic admission staff anticipated a far greater demand.

Reservations were expressed at the consultative meeting about the central role of the CNAA, and whether the existing registration procedures of participating institutions would be infringed. But it was agreed there was no intention to override the academic freedom of the institutions, the major aim being to create new opportunities for mature students in higher education.

The scheme would also be innovative in its acceptance of some prior learning experience of students, making them exempt from certain elements of study. But this part of the scheme will not be implemented next year. The CNAA is planning to investigate developments in experimental learning assessments which have been taking place on a small scale in some institutions, notably at Thames Polytechnic, before putting forward any proposals.

YTS is here to stay, says King

by Patricia Santinelli

The Youth Training Scheme is a permanent feature and planning and work it should take place accordingly, Mr Tom King, the Secretary of State for Employment told senior members this week.

Speaking at a conference in London of the Large Companies Unit, which provides places on the scheme, Mr King said it was surprising that the YTS had not been devised yeras ago.

"YTS is the first systematic attempt by any British government to remedy one of our worst deficiencies – the lack of basic training and work experience to bridge that real gap between school and the world of work," he said.

"That approach is here to stay and this Government will strongly support it."

The scheme was already the route to jobs for hundreds of thousands of young people and would become so for even more, Mr King said. This was good news for industry and everyone else.

"This is why I resent those who knock YTS and prevent young people from getting involved. YTS will be the main route to jobs for a major group of young people. They will be far better off than those who chose not to go on to the scheme."

Mr King said that one of the key issues affecting the YTS was the question of its future funding and balance. The contribution of the public sector was only a small proportion, so it was of great interest to assess what the right proportion from the Government and employers should be.

"This is not a threat," he said. "Such a reassessment of funding is bound to happen because the Government has to examine whether it is spending the right amount and in the most appropriate way."

There should be no suggestion of departing from the whole concept of a training allowance.

"For example I do not want it to become a wage as has been suggested, because this would endanger the whole question of resources available."

Mr Geoffrey Holland, director of the Manpower Services Commission who was awarded a CB in the Queen's Birthday Honours list said he would like managers to plan for a scheme open to all school-leavers, not just 16-year-olds but 17-years-olds.

One of the most important issues in the second year of the scheme would be to find means of progression. It was no good providing a foundation year which lead nowhere.

"One avenue of progression is into further and higher education whether part time or full time," Mr Holland said.

"A large number of young people emerging from YTS will want this opportunity. It is important therefore for further and higher education to provide this through access and admission."

Replying to a question from Mr John Pardoe, managing director of Sigin and Sound, Mr Holland admitted that the YTS was a means of raising the school leaving age, although he preferred to think of it as foundation training.

Commissioners of the MSC are expected to make a decision about the level of the training allowance at their meeting next week. No consensus on the level was reached at the meeting of the Youth Training Board last week.

Some members want the commission to approach the Government for extra funds to finance an increase in the allowance, others would be satisfied with an increase to £26.25, from the current £25, while others do not want the rate to be pegged.

Commissioners are also expected to decide whether the YTS should be extended for 1985/86 to take in all 17-year-olds, including both employed and unemployed, as well as some disadvantaged 18-year-olds, and those in the same age group entering long duration training or apprenticeship.

The proposals were put forward by the YTS review group. A decision must be taken now because discussion on public expenditure plans for 1985/86 are due to start soon. The remaining recommendations will be put to a meeting of the commission in July.

Roderick Tye's sculpture, a figure from the constructed birth of Brother Mud, is the centre of attention at the Slade School of Fine Art's MA degree show.

The exhibition closes officially today but can still be seen at the school, in Gower Place, London, next week.

Scots lecturers take action over service conditions

by Olga Wojtas
Scottish Correspondent

Scottish education college lecturers are to take disruptive action following a refusal by management to implement standard conditions of service agreed three years ago.

The national chairman of the Association of Lecturers in Colleges of Education in Scotland, Mr George Livingstone, has written to all members following last Friday's meeting of the Scottish Joint Negotiating Committee warning that "next session will start with unaccustomed drama".

There will now be talks in the seven colleges on "withdrawal of goodwill" with various sanctions being imposed such as confining all commitments to the working day, not using cars for college business, and refusal to attend college committee meetings.

ALCES has been negotiating a standard contract for all education colleges since 1975. It was finally recommended for implementation in 1981 by the now defunct College of Education Negotiation Committee now replaced by the SJNC which covers education colleges, central institutions and further education colleges.

ALCES has been angered by what it sees as the SJNC stalling on the issue, and two weeks ago warned college governors that unless standard conditions of service were implemented, staff would take action. However, management has refused to ratify the agreement, and has hinted that it wishes to introduce standard conditions of service for all three sectors.

The Association of Lecturers in Scottish Central Institutions also produced a common set of conditions of service which was not accepted by management.

Mr Jack Dale, secretary of ALSCI, and leader of the SJNC staff side team, said the ALSCI paper was a completely separate issue from the colleges of education, and staff were not prepared to discuss them together.

Management has made no specific proposals, said Mr Dale, and the SJNC is not due to meet again until October.

Computer staff in strike threat

The University of London Computer Centre is threatened with strike action over an attempt to employ two members of staff on fixed term contracts.

Members of the Association of University Teachers at the centre are being balloted on a call for a one-day strike which has already been backed by union leaders.

It is the first time national authorization has been given for action of this sort, which is a part of the union's initiative against the use of fixed term contracts in the universities. The centre maintains that because funding for the two posts in question is short term, the appointments must follow suit. But the AUT wants the two appointments to be on a permanent basis.

Mr Malcolm Knight, the AUT's regional official for London, said that the Computer Board for Universities and Research Councils met more than 80 per cent of the cost of running the national centre in London.

"It is in the power of the centre to provide continued employment rather than saying that any limitation on funding is automatically a limitation on appointments," he added.

The result of the ballot of the AUT's 55 members out of about 80 academic-related grade staff at the centre is expected on Tuesday, but union leaders accept they will not be able to close down the operation. Advice to users will be hampered however, and discussions are taking place with operating staff who belong to the National and Local Government Officers Association about their support for any action.

One of the appointments is for two years and the other for three. But AUT spokesperson at the centre, Mr David Laxton, said: "It is not to the advantage of such a specialist centre employing highly skilled people to create uncertainty and insecurity of employment when in the normal developments of high technology opportunities are always being created.

Survey highlights completion rates concern

A number of universities, including Durham, Leeds, Leicester and Liverpool, still need to work hard to improve the rate at which their social science students complete their PhDs, according to a survey just completed.

The survey, by the Economic and Social Science Research Council of postgraduate students it has supported, shows that overall one in four students who began their research in October 1979 had submitted their theses by October 1983, still one year after the end of their grant support.

Submission rates became a bone of contention after the criticism in the Swinnerton-Dyer report on postgraduate education in 1982. Since then, the ESRC has promised to produce an annual survey of how universities are faring.

The latest figures show a definite improvement compared to surveys mentioned in that report which showed just 10 per cent of students had completed after three years, and 19 per cent had completed after four years.

The ESRC is keen not to read too much into the latest survey, particularly with important reforms on the way including emphasis on more taught work for PhD students. But it admits a number of universities do still need to improve their rates.

Including only institutions with 10 or more PhD starts in 1979, the best performers are York, with a 60 per cent submission rate from 10 starts within four years, Aberdeen (44 per cent from 14 starts) University College, Cardiff (36.4 per cent from 11 starts), Oxford (33 per cent from 51 starts) and Sheffield (33 per cent from 15 starts).

Next come Sussex and Manchester (each 30 per cent from 20 starts) and Nottingham (30 per cent from 10 starts), Cambridge (29.6 per cent from 27 starts) and Glasgow (25 per cent from 12 starts), Lancaster (24 per cent from 17) and Essex (20 per cent from 15).

At the bottom end of the scale come the London School of Economics (18 per cent from 38 starts), Kent (14 per cent from 14) Leicester (13 per cent from 15), Leeds (12 per cent from 17) Durham (9 per cent from 11) Liverpool (8 per cent from 12) and University College London (8 per cent from 13).

York, though modest about its success and still keen to point out the influence different subjects have on rates, puts its success down to the high priority the supervisors give to ensuring theses are prepared with submission continuously in mind. Professor Charles Feinstein, head of the economics and related studies department, said two or three academics were often involved in supervising each student, so they rarely had difficulties finding someone to give advice.

Postgraduates to get 6% rise on grants

Grants for postgraduate students are to rise by up to £180 from September – much more than the rise in awards to undergraduate students.

The main rates are to increase from £2,998 to £3,170 (5.8 per cent) for London students, from £2,430 to £2,585 (6.4 per cent) for others and from £1,778 to £1,905 (7.3 per cent) for students living in the parental home.

For undergraduates, grants will rise by only 4 per cent, but there is a massive increase in the "extra weeks" allowance for students studying for more than the regular college year. The extra money for postgraduates reflects this because they are entitled to support throughout the 52 weeks of the year.

Postgraduates also receive a small extra amount to meet the additional costs of their study. The estimated cost for 13,700 students is £39m for 1984/85.

As well as increases in the allowance for age and postgraduate experience, the income disregard for scholarships, payments from sponsors and teaching or demonstrating pay is to rise by 7 per cent from £1,080 to £1,155.

'Yes' to assembly

The Engineering Council has approved plans for a national engineering assembly. Chartered engineers and other registered engineers will be able to elect representatives in 20 local constituencies. The assembly will meet each year to discuss the council's policies.

Whitehall rivals 'stop links'

by Jon Turney
Science Correspondent

Rivalry between Government departments is blocking action to improve research links between higher education and industry, according to Sir Alan Muir Wood of the Advisory Council for Applied Research and Development.

Sir Alan was speaking on the eve of the first anniversary of the report a group he chaired produced for ACARD and the Advisory Board for the Research Councils. Although the report was produced at the express wish of the Prime Minister, the Government has yet to make a formal reply.

The report recommended two new series of awards for universities and polytechnics promoting industrial liaison: one was a fund to reward institutions who win outside contracts, to be worth £10m a year at first; the second, worth half as much, was to pay for schemes like science parks, industrial liaison officers or patent services, the infrastructure of links with industry.

Sir Alan maintains that action on these ideas is held up by disagreement about who should pay: "everyone has been saying what a splendid idea, but not out of our budget", he said.

As long ago as last October, officials at the Department of Trade and Industry were happy to agree that the smaller of the two funds was well on the way, under the name Liaise, and would be backed up by a trial database of university inventions. They forecast a response to the ACARD report in January this year. But the DTI has so far failed to come up with the money.

"It's absolutely absurd that we can't find this seed corn money". Sir Alan said. "I just don't believe it can't be found if the Government determines to overcome jealousies between departments".

He added that he was disappointed with the lack of response because he believed enhanced industrial liaison was highly important for the universities. The case for the measures outlined in the report was stronger than ever, he believed, but the more time slipped past, the harder it would be to set up a scheme that had the right effect.

Several draft responses to the full report have been prepared by the Department of Trade and Industry, but a DTI spokesman said there was still no final date fixed for publication of a reply.

Other ACARD recommendations waiting on Government action include a ministerial "awareness campaign" on the benefits of academic-industrial collaboration, closer links between the DTI and the Science and Engineering Research Council, with the department funding more industrial brokers to put firms in contact with relevant academic research groups.

Leader, back page

How Dame Mary's garden grows

Personal File

by Paul Flather

The vice chancellor of Oxford University is going to have to learn to use a washing machine. That is the inevitable result of Dame Mary Warnock's appointment as the next mistress of Girton College, Cambridge. While his wife spends more time elsewhere, Geoffrey Warnock will have to fend more for himself in the lodgings of Hertford College where he is principal.

It is quite a month for Dame Mary. Not only has she just been elected to head Girton, but next week she presents her committees controversial report on *in vitro* fertilization to Government ministers, a tangled web of issues to challenge anyone's philosophical abilities.

She continues her philosophy lectureship at Christ Church until she moves to Girton at the beginning of 1985, and she has just had her term on the Economic and Social Research Council extended. She has just written about the "becoming adult" research sponsored by the council in the latest ESRC *Newsletter*.

She is sitting on the Lindop committee investigating validation and academic standards in the public sector, and she still chairs the Home Office committee on animal experimentation whose findings are expected to pave the way for a Parliamentary Bill next year.

By any standards Dame Mary is a committee woman extraordinary. Her past sents include the board of the Independent Broadcasting Authority, the Royal Commission on pollution, the UK committee of Unesco, and she headed the committee on special education for the handicapped, a corner she still fights passionately.

Fellow committee members say she is a good listener who makes her points forcefully when she is ready. After all her experience listening, cajoling, guiding, advising, arguing, she claims modestly she does not seem to be to control her current committees does, however, confess to enjoying psychology of committees. "Every very different and very interesting

Dame Mary: open to new ideas

Dame Mary first became a philosophy at St Hugh's College, ford, in 1949, the year she married. She has five children. In 1966 became headmistress of the powered Oxford High School, becoming a research fellow at Margaret Hall, and then moving Hugh's College.

Her academic interest has primarily philosophy of the mind, she hopes to complete a new book memory this summer before being embroiled in Girton life. It should published by Faber next year. Earlier works have been on Sartre (1976), teaching (1977) and educ (1979).

She comes across as a fairly formable woman, always certain to be course or solve the task, but also open to new ideas and debate. Her contacts in secondary schools bound to be a useful addition to urgent admissions debate current wrecking Oxbridge.

She lists gardening among her creations. No doubt she will manage to run the Wiltshire she so loves despite her

HMI accommodation claims rejected by Kingston Poly

by Patricia Santinelli

Kingston Polytechnic's faculty of education has rejected the claims that it could not accommodate more students, which were made in the first of Her Majesty's Inspectorate report on initial teacher training in individual public sector institutions.

The HMI report, published yesterday, is part of a national survey on teacher training which started initially in a small number of institutions but spread to encompass all colleges and polytechnics as well as some universities.

In January 1984, the inspectorate decided to ask institutions if they would accept publication of the reports in view of the setting up of the Council for Accreditation of Teacher Education which is to rely heavily on inspectorate reports.

The report basically gives the faculty a clean bill of health. But it is critical of some aspects and concerned that accommodation problems will worsen when teacher training students numbers rise over the next few years.

In a commentary on the report – not the official response – the faculty's dean, Dr Bob Godfrey, says this is not the case, although he welcomes the unbiased nature of the report. He is pleased too that they have highlighted the fact that students are given an effective and practically biased training which prepares them well for their first years as classroom teachers.

"A modest increase in student numbers could lead to a more effective use of existing space and further strengthen the staffing base of teacher training courses", he says.

He adds that the shortage of accommodation, as indeed the inadequate number of book purchases and lack of funds for materials, stationery and 'equipment, is due to a drop of £1m in the polytechnic's revenue within a very short time.

The report does contain some criticisms of the content of courses. For example, it points to the fact that subject study element in the early stages of the BEd is in its present form unrelated to the rest of the course.

It also questions the shortage of time for language and maths in the PGCE primary options and describes this as barely adequate in the BEd. The report is critical too of the balance between English and the teaching of reading, and says there is a lack of cohesion between these components.

The faculty points out however and this is partially recognized in the report, that action has already been taken on at least two of these aspects in the revised BEd. There has been an increase in the interrelationship between main and applied subject studies, and the time for language and maths has been increased. The BEd submission is waiting to go to CATE before it can be validated for a 1985 start.

news in brief

Call for national planning body

The Socialist Educational Association has called for a single national planning body for higher education, to be advised by regional committees, in a new policy statement. It put forward the National Advisory Body as a more acceptable model than the University Grants Committee.

Decisions should be taken openly and should reflect the perceived needs of students and the nation, rather than the narrow interests of institutions or academic staff, said the SEA.

SRC centenaries

Edinburgh University's Students' Representative Council, the first to be established at a British university, celebrated its centenary at the weekend with a dinner attended by 36 of its senior presidents, including Dr J. S. Jeffrey, elected in 1926.

Aberdeen University's SRC, also set up in 1884, held its celebrations last month.

Cash refused

Ministers have ruled out more money for the university-based Overseas Research Students Award Scheme which will block any plans for its extension to the polytechnics.

SERC members

Four new members have been appointed to the Science and Engineering Research Council, to serve for four years from October this year. They are: Professor Sir Michael Atiyah of the Mathematical Institute of Oxford University; Professor Brian Clarkson, principal of University College, Swansea; Professor Alan Cook, Master of Selwyn College, Cambridge and the new chairman of the council's Astronomy, Space and Radio Board; and Professor Cyril Hilsum, chief scientist at GEC's research laboratories.

Students fear ULU takeover

London student leaders believe the Jarratt inquiry may spur University College into greater efforts to take over the University of London building.

UCL's bursar, Mr Edward Williamson, confirmed this week that there had been the "vaguest" of informal discussions over ULU as one solution to the union's chronic lack of student union facilities.

The college had ambitious plans for a £4m purpose-built union building of its own which formed part of its one hundred and fiftieth anniversary appeal. But this failed to yield enough for the project and with University Grants Committee money unlikely, the college has been exploring alternatives.

It is understood that the suggestion of ULU, and a second option, Hillel House, the Jewish student hostel in Endsleigh Street, came from the university.

But Hillel House is unlikely to any more satisfactory than the present cramped accommodation Gordon Street, while UCL's student leaders regard the ULU option unacceptable politically.

They share the view of ULU president Mr Hayden Williams that it would undermine its role as a representative voice of London's 46,000 students as an important social and sporting facility for students from outlying colleges.

Mr Williams said: "UCL has built eyes on ULU for some time and will general rationalization they have an excuse to try something on."

There is understood to be a view among some UCL academics that the ULU solution should be encouraged and that this is shared at the highest levels in the university.

From left, Mr Roger Blake, Professor Jim Ball, Dr Ralph Riley and Professor Friedrich von Hayek.

Monetarists honoured in birthday list

by Paul Flather

The Prime Minister has continued to pay off her debts to the economists who shaped her monetarist outlook, with honours for Professor Friedrich von Hayek and Professor James Ball, retiring principal of the London Business School, in the Queen's birthday list.

Professor Hayek, aged 85, who has long been acknowledged as Mrs Thatcher's leading economic guru becomes a Companion of Honour. He lives in Germany but is a naturalized British subject, and was professor of economic science and statistics at London University from 1931 to 1950.

Two other Companions of Honour are Viscount Eccles, former Conservative minister of education from 1954 to 1957 and again from 1959 to 1962, now involved with such bodies as the World Crafts Council and the British Museum, and Sir Philip Powell, whose work includes extensions and new building for a host of Oxbridge colleges.

Professor Ball, principal of the LBS since 1972 is knighted, along with Professor John Hale, professor of Italian at University College, London, who has written extensively on Renaissance history.

Dr Ralph Riley, a former plant geneticist, who as secretary has helped to re-structure the work of the Agricultural and Food Research Council in the face of extensive budget cuts, is also knighted. He is due to retire next year.

There is a CB for Mr Norman Herdyman, secretary of the University Grant Committee since 1932, after some 30 years in the civil service, mostly in the Department of Education and Science, and Dr John Davies, director of Wales Polytechnic, a civil engineer by training, becomes a CBE for his all round contributions to the region.

The chief joiner for London University is also honoured. Mr Roger Blake, the foreman carpenter, who joined Senate House in 1953, gets a BEM.

Companions of Honour: Viscount David Eccles, for political and public services; part to the arts; Sir Philip Powell, for services to architecture; Professor Friedrich von Hayek, for services to the study of economics. Knights Bachelor: Professor James Ball, principal London Business School; Professor John Hale, for services to learning and the arts; Ralph Riley, secretary, Agricultural and Food Research Council. Order of the Bath GB: N.T. Herdyman, secretary, University Grants Committee; J.H. Perkes, permanent secretary, department of Education, Northern Ireland; Geoffrey Holland, director of the Manpower Services Commission.

Order of St Michael and St George CMG: D.A. Michelson, professor of bacteriology, Royal Postgraduate Medical School, London.

Order of the British Empire. CBE: P. Armitage, professor of biomatha, Oxford University; J. Ashton, professor of agricultural economics, Newcastle University; D.P.J. Browning, chief education officer, Bedfordshire; C.R. Cheney, services to English medieval history; J.H. Davies, director of education, Clwyd; R.B. Duthie, Nuffield professor of orthopaedic surgey, Oxford University; I.B. Flett, director of education Highlands region; R Guilford, professor and head of department of special education, Birmingham University; J. Hosier, principal Guildhall School of Music and Drama; T.G.H. James, keeper, British Museum; L.P. Le Quesne, deputy vice chancellor and dean of faculty of medicine, London University; P. Matthias, Chichele professor of economic history, Oxford University; S. McDowall, senior lecturer in economics, St Andrews University; K.A. Pounds, professor of space physics and X-ray Astron Group, Leicester University; I. Williams, principal, Braintree College of FE.

OBE: Mrs P.A. Bowen-West, deputy director, Bedford Coll of HE; Miss E.K. Chapman, lecturer, department of special education, Birmingham University; H.N. Chittick, services to archaeology and ethnohistory of E Africa; B.W.R. Cox, acting director, National Institute of Agricultural Engineering; T. David, editor, *Education*; J.D. Davies, director of Wales Polytechnic; K.J. Dean, principal SE London College; L.D. Gombos, senior trustee, Petroleum Law Education Trust; Miss M. Gretham, head of cataloguing, science reference library, British Library; T.B. Haig, principal Scottish Education Department; J.D. Haslin, adviser in general practice, Oxford Medical School; H. Higham, librarian, Bristol University; A.N. Johnston, chairman North-Eastern education and library board; Professor I.R. Kramer, emeritus professor of oral pathology, London university; A.I. Marsh, senior research fellow in industrial relations, Oxford University; Miss B.R. Masters, deputy keeper of records, London; A.D. Milne, director, Wolfson Microelectronics Institute, Edinburgh University; J.E. Nesbitt, professor of education and head of education centre, New University of Ulster, N.W. Sage, director of computing services, Southampton University; D.L. Schultz, Donald Patrick, reader in engineering science, Oxford University; R.J. Smith, vice chairman, North of Scotland College of Agriculture; G.C. Timbury, lately dean of postgraduate medicine, Glasgow University; Fred Janes, lately principal of Yeovil College, Somerset.

MBE: R.D. Cameron, lately warden, University College, Cardiff; Mrs R.P. Devonald, senior lecturer in an education, Bath College of HE; C.H.H. Davidson, executive officer, Economic and Science Research Council; Miss E.M.G. Germon, senior personal secretary, Department of Education and Science; Mrs M.R. Lewis, senior personal secretary, Agricultural and Food Research Council; J.H. Pearson, deputy principal, Westminster College; G.W. Simpson, voluntary science adviser, Cambridgeshire Council.

British Empire Medal: R.D. Blake, foreman carpenter, Senate House, London University; A.J. Brown, professional and technology officer, Grade III, Rothorland, Appleton Laboratories.

Poly to axe naval training departments

by Karen Gold

City of London Polytechnic is to issue 40 academic staff with a year's notice on August 31, following a decision to close two departments.

The departments of marine engineering and maritime studies will close at the end of this term, although students already enrolled on courses will be able to finish them.

The decision follows the National Advisory Body's ruling that advanced courses in the two departments, which train entrants to the merchant navy, should cease: some this year and others in 1985.

The polytechnic appealed to the Department of Education and Science for the courses to continue longer because there was still demand for them, according to deputy provost Mr Stephen Jones.

It also put forward to the Inner London Education Authority a plan to expand non-advanced work in the departments to replace the advanced courses.

But the ILEA, although it approved the plans, would not fund the extra courses, and the DES has still not replied to the polytechnic's appeal. So it was decided to close both departments this year, Mr Jones said.

"The polytechnic management was faced with the need to take a view as to whether the polytechnic could live with the continuing uncertainty until the DES took a decision", he said. "It was decided that we should go for the difficult decision now".

The 40 staff will be able to apply for redeployment with the polytechnic or the local authority, and if they are not successful within the year to apply for the ILEA's new voluntary severance scheme. At present the number of redeployments possible within the polytechnic is not known.

Looking ahead

The university, polytechnic and institute of higher education in Liverpool have combined to give 14,000 of the city's sixth formers a taste of higher education in a two week exercise starting on Monday.

The pupils will attend lectures, seminars and practicals provided free by staff in their chosen subjects. They will also be given advice on admission procedures.

London urges new funding

by Maggie Richards

The development of continuing education must not take place at the expense of research and undergraduate teaching, says London University, the largest conventional university provider of adult education in Britain.

In its response to the University Grants Committee working party proposals on continuing education, London supports moves to expand and develop the sector, but reiterates its view, expressed last year, that new funding is necessary to enable growth while maintaining the present undergraduate programmes.

The London University report, approved by senate, points out that more than a quarter of the university teaching and research activity is already directed towards continuing education, and that entire institutions within the university's federal structure are devoted to work in the continuing education field.

The response questions the UGC working party's finding that the learning needs of mature entrants are different from those of full-time students. "This is not borne out by the experience of staff teaching the many mature students accepted by this university. Potential difficulties lie rather in lack of sufficient teaching resources to provide continuing education as well as the traditional forms of university education, not in the diversity of learning needs."

The university also expressed surprise that the working party did not make specific recommendations about the application of distance learning techniques.

"There is great potential for the application of new technology in continuing education, and techniques such as the video disc are already being developed within this university. The refinement and testing of such distance learning methods, demand a considerable initial investment of staff time and of capital resources, and moreover will require the evolution in the longer term of an organizational structure appropriate to these new developments. Current restrictions on university finances make it difficult to envisage how the requisite resources could be released for these important tasks".

Extreme concern is registered about the various financial proposals put forward by the UGC working party. A suggestion that funding procedures should be adjusted to ensure grants to part time degree and diploma students are commensurate with awards to full time students would result in an average grant reduction of 3.2 per cent for full time students and a conconitant loss of some £7m to the university existing full time activities.

"Such a consequence would not be acceptable to a majority of this university's colleges, whose activities are concentrated on the vitally important tasks of research and undergraduate teaching. The development of continuing education should not be at the expense of these activities," declares the report.

Similar reservations are expressed about proposals to allow virement from full time to part time study and to adopt a uniform conversion system for assessing short courses against full time provision.

In the area of post-experience vocational education, London says many of its institutions would willingly expand their already considerable efforts. Experience in engineering and medicine departments has already demonstrated how profitable such initiatives could be.

But, the university warns, substantial initial investment is required for such ventures and it is not confident that the working party's calculation of the cost per student will be sufficient to finance such operations.

Brooke's prescription for youth service success

A call for local authorities and voluntary organizations to work closely together to ensure better coordination and management of resources in the youth service, has come from Mr Peter Brooke, junior education minister.

Speaking at conference on European Youth Work Policy and Practice in Leicester last week, Mr Brooke said this was very much in line with current Government thinking on the sort of response which should be made on the outstanding recommendations of the Review Group on the Youth Service.

Mr Brooke added that he was aware that local authorities and voluntary bodies were already working together, but more than goodwill was needed if this was to develop. A continuing dialogue was necessary, and this would undoubtedly need structures, local committees and other meetings.

"But I am not suggesting that a disproportionate amount of time should be given to discussion, at the expense of work with young people" he said. "I am suggesting a steady contact leading to harmonization of policies, better coordination and more effective use of resources. This could lead to common training programmes and the best geographical provision for each locality".

But Mr Brooke stressed that the objective of better coordination was not to try and secure a nice neat administrative machine. There were and would be differences, for example, between the emphases of different voluntary organizations, and this was valuable and necessary.

Turning to International Youth Year, Mr Brooke said that there was a major job ahead to make sure the true image of young pepole came through.

"The negative aspect of what young people do tends to hit the headlines. But the football hooligans, although a serious problem are a tiny minority. There is a need to emphasise the positive aspect to show what young people are doing".

New centre for video

The Council for Educational Technology is to set up a new centre for interactive video. The centre, to be opened in London this September, will offer information and advice to education and training users or producers of the new technology.

Interactive video systems join the information storage capacity of videodiscs to microcomputers, which enable users to select many different paths through a mass of stored material – whether words, diagrams or pictures. Negotiations for the new CET centre began last year, when a council report on interactive video recommended government help to get educational applications of the ground.

The new centre, to be sponsored by the Department of Trade and Industry, the Manpower Services Commission and Philips and Thorn EMI, will provide support services, keep a register of research projects, and organize seminars and briefings on interactive video.

Why the worm has turned

Ever since this Government came to office in 1979 it has set out to systematically devalue the teaching profession. Schools, further and higher education and universities have all been the butt of Government criticism. They have been variously accused of having the wrong goals, not adapting to modern industrial pressures and generally failing the nation.

Teachers and lecturers are held to have lost the confidence of young people, having failed to manage the transition from school to work (what work?), and being insufficiently aware of vocational needs. Lecturers have been charged with not keeping up-to-date in their areas of expertise or returning frequently enough to industry, commerce or the professions.

It is as though, prior to present Government pressures, the teaching profession were inward looking and suffering from a kind of collective complacency which was leading to a slow decline in professional standards. No evidence to substantiate these views has ever been adduced but they have been persistently advocated.

In education, as in many other areas of the public sector, the Government has deliberately, and as a matter of public policy, set out to depress resources for the sector. Its plans, including the present expenditure plans, project further substantial redundancies for lecturers in the sector.

The Government has used these strategies, and the demoralization which they cause, to lay the foundation for its retrograde educational policies. It has adopted an attitude that has been interventionist both in the schools sector and particularly in public sector further and higher education, through the Manpower Services Commission it has spawned a series of initiatives aimed at influencing education in the public sector of which *Training for Jobs* is only the latest and most far reaching. Such now is deemed to be the incompetence of the public sector, both lecturers and employers, that the MSC will inherit 25 per cent of the resources currently controlled by the local authorities so that they can be directed more effectively and vigorously towards work related education. Often the instinctive response to the MSC arises not so much from an assessment that everything the MSC does must be negative, but from the context in which the MSC is portrayed as saving the system from its own vices. New initiatives are apparently being taken not because they might be of benefit, but because the system needs a further shake up and cannot be relied upon to take steps in response to a Government request.

Why should anyone therefore be surprised if at some point the teachers finally turn. The major disputes may currently focus on pay but in part at least the teaching profession as a whole is venting its frustration at the low value placed upon them and their jobs by the present Government. Lecturers in further and higher education feel the need to regain the respect they have lost.

No wonder then that this year this has seen a major battle over pay. The Government really ought to be made to pay for this year's dispute – after all it is their chickens that are coming home to roost.

Jean Bocock

The author is assistant secretary for higher education at the National Association of Teachers in Further and Higher Education.

PNL lecturers go to appeal

Fourteen lecturers from the Polytechnic of North London were appearing in the Appeal Court today, arguing that they should not have to identify photographs of students.

The hearing follows the High Court ruling that they should identify the students to the solicitors acting for Mr Patrick Harrington, the National Front organizer and second-year philosophy student at PNL.

A statement of support for the lecturers was issued last week by representatives of the Inner London Education Authority, the Association of University Teachers, the National Association of Teachers in Further and Higher Education and the Council for Academic Freedom.

The High Court's decision had placed the 14 lecturers and others at the polytechnic in an intolerable position, the statement said.

"Education depends on personal trust and confidentiality between student and lecturer," it said.

PARTY LINE

Managing the time to learn

You cannot buy it. You cannot hoard it. You cannot stretch it. It is so perishable, yet irreplacable. Once lost, it is irretrievably gone.

The moving finger writes and
having writ moves on.
Nor all your piety nor wit can
cancel half a line
Nor all your tears wash out one
word of it.

Incidents suddenly recall these famous words.

If we are to make more of our time, we must manage it more effectively. Few of us do in our personal lives. And not enough thought is applied to its use in general. Some people have, of course, nothing better to do than waste time: one can think of all the idiot causes and phoney issues to which GLC councillors devote their time.

But time *is* susceptible to good management and in few areas is this more true than in our educational system.

It has become commonplace to identify an imbalance between the attitudes and skills generated by the educational system and the country's actual requirements. So pressures on the educational system have mounted. Vocational objectives vie with traditional liberal values.

New disciplines, such as computer studies, emerge but they, along with older subjects, have to compete for space in the curriculum with a plethora of "social" courses which are supposed to help pupils better to take their place in society. But what a lot of wasted time there is in our schools and what a lot of unfulfilled potential. For far too many people very little effective use is made of 11 years.

Clearly some schools are more guilty than others. But I am beginning to wonder if there isn't something in the nature of the way we organize our schools that fails to make the best use of the time they have our children in their care; that instead of inspiring a love of learning bores young people stiff, that suppresses potential rather than develops it.

Teachers have of course to cope as best they can with the social and home shortcomings of their pupils, and some people will argue that the school is of comparatively minor significance in the development of the child. Yet it is still the case that we operate on the basis of a great simplicity, one that has once more been seized on recently following Her Majesty's Inspectorate's reports – namely, that better quality schooling (which implies more resources) is the essential basis for everything that comes afterwards. We are always talking about getting the foundations right.

I do not doubt that it is a great help if we can. But I happen to think that we overpitch our expectations of what is likely to happen.

In reality, hundreds of thousands of adults have remedied the inadequacies of their earlier formal education through the adult literacy campaign. In what once were called "pre-TOP" courses youngsters were able to acquire in an intensive six months' period the achievement they failed to reach during 11 years of schooling. Intensive adult language courses demonstrate the same thing.

When it comes to the most effective use of time we have in this country failed to recognize sufficiently the value of adult part-time education. It is now almost exceptional in the United States to find a political figure who does not boast of having been through a part-time law degree.

So, apart from looking again at the use of time within the school and determining better key educational priorities and putting them before social engineering, there is also a powerful case for switching attention to post-school learning and part-time opportunities in particular.

Keith Hampson

The author is Conservative MP for Leeds North West.

overseas news

African v-cs sign cooperation pact

by David Jobbins

Vice chancellors from key universities in eastern and southern Africa hope a new understanding will trigger greater regional cooperation in research vital to developing countries.

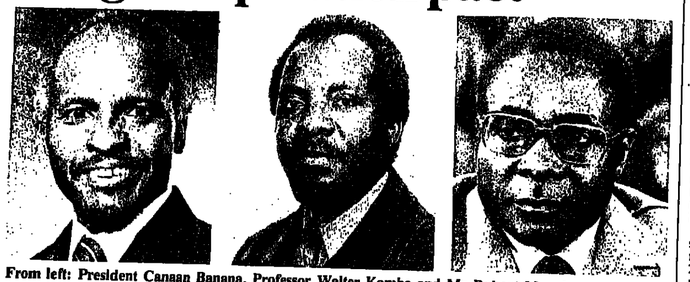
Other immediate priorities for the programme agreed by vice chancellors from eleven countries spanning the continent include exchange of academics, students and external examiners, staff development, and strengthened postgraduate teaching and research.

The theme for the discussions was set by Mr Robert Mugabe, prime minister of Zimbabwe, when he received an honorary degree from his country's university which hosted the talks.

Without active and relevant research programmes universities in the developing might maintain their academic excellence, but the standards set would be resting on a foundation created by others, he said.

"Our universities will constitute costly irrelvancies in respect to our national developmental initiatives and requirements," he warned.

The national universities who signed the Harare declaration which established the aims of the Association of Eastern and Southern African Universities are from Botswana, Ethiopia, Uganda, Lesotho, Somalia, Swaziland, Tanzania, Malawi, Mauritius,



From left: President Canaan Banana, Professor Walter Kamba and Mr Robert Mugabe

Kenya, Zambia, Mozambique and Zimbabwe. The Sudan is also a member of the new association but none of its vice chancellors was present in Harare. Four other countries are eligible for membership but do not have universities at present – the Malagasy Republic (Madagascar), the Comoros, and the Seychelles, and Namibia, although South Africa is firmly out of the running for evident reasons.

The new association is to be chaired by the vice chancellor of the University of Zimbabwe, Professor Walter Kamba, who was eager to ensure that some concrete results came out of what might otherwise be a lofty but unattainable declaration of principles.

As well as promoting cooperation and helping to maintain high and comparable academic standards the association sees its activities as an attempt to strengthen the work of the Association of African Universities, especially on a regional basis.

In addition to a general conference, it intends to organize regular academic meetings and conferences, with inter-university cooperation.

The association's offices and secretariat are initially to be established in Kampala, and it has launched an appeal to national governments and aid agencies for financial support.

Opening the discussions, Zimbabwe's president and chancellor of the university, the Rev Canaan Banana, said that for too long African integration had been considered in terms of political and economic factors.

"The most potent and perhaps the most fundamental area of collaboration which undergirds political and economic integration is the close cooperation of Africa's intellectual community in a system of inter-university cooperation," he said.

Seminar backlash spreads

The action by the Belgrade po... Good Friday against the ... seminar on Yugoslavia's ... problems continues to raise pr... for the authorities. Caution ... raised at last week's Central Co... tee meeting for greater democ... tion of Yugoslav society has ... interpreted to mean that even a ... highest levels of the Party th... support for the view that the p... mismanaged the affair. By ... 28 participants, they have ... unnecessary publicity to what ... wise might have remained an ... cant fringe movement of intel...

Out of the 28 people taken ... interrogation, six have been fin... arrested; Dragomir Olujic, a ... radio journalist in whose apart... the seminar was held, Miodrag ... film-maker, Dr Vojislav Se... sociology lecturer from Sarajevo ... versity, and three Belgrade Univ... students, Vladimir Mijanovic, Ir... ko Imsirovic and Milan Milutin ... mid-May, Olujic, Milic and ... have been on hunger strike in p... against their arrest.

They all face charges of campa... propaganda hostile to the stat... the official media have vilified the... aiming to overthrow Yugosla... managing socialism". Particular ... mence has been employed again... Seselj, who has written extensive... such issues as democracy, nati... freedom and freedom of expres...

During the Winter Olympics, ... Dr Seselj was travelling from Sara... to Belgrade, four secret police ... broke into his train compartm... confiscated a number of his ma... scripts and took him off the train ... interrogation with lasted 27 ho... Simultaneously, his apartment ... university office were searched an... his files and documents were co... cated.

Following this incident the Serb ... Sociology and Philosophical Soci... issued formal protests that the ar... fiscation of his manuscripts wa... breach of academic freedom. In ... confusion which followed the ma... the seminar, it was widely belie... that the same societies had once ag... intervened on Dr Seselj's behalf. It ... have now denied any such protest, ... the Philosphical Society has ta... pains to point out that its ear... statement merely condemned the ... breach of legality involved; it did n... imply that the society, in any w... shared Dr Seselj's views. Dr Sese... colleagues and students at Sarajev... moreover, have been induced to si... denunciations of his views.

So far the lecturer at the semin... dissident Marxist philosopher Mihaj... Djilas, has suffered nothing wor... than a 21 hour interrogation.

The mysterious death of Radomi... Radovic, a 33-year-old engineer wh... disappeared shortly after he was ... interrogated from interrogation, and wh... was then found dead a week later, on ... April 30, still has not been satisfa... torily explained. The authorities ha... at first to attribute it to an overdose ... sleeping pills. A lawyer for the Rado... vic family, however, then revealed that ... the cause of death was poisoning b... insecticide.

Radovic's family deny that he was ... likely to commit suicide, and no ex... planation has been offered by the ... authorities.

Draft ruling challenged by Quakers

from P. G. Burke

WASHINGTON

Four small liberal arts colleges, three of them founded by Quakers, are challenging the requirement of the US Government that men who apply for federal grants when attending college must first register for military national service. (At present there is no military call-up; it is merely registration, and only men are required to register.)

The case is being considered by the US Supreme Court, but no ruling is expected before July. The case was brought when the Reagan Administration sought to overturn a decision by US District Judge Donald L. Alsop in St Paul, Minnesota, when he ruled in favour of six Minnesotan students that "it is an unconstitutional form of punishment to force students for forfeit federal aid unless they prove that they have registered (for military service)."

The reason for his ruling was that the requirement "is an unconstitutional 'bill of attainder' – that legislatively determines guilt and inflicts punishment without a trial."

The colleges that have brought this case to the Supreme Court are telling the justices that the Reagan Administration is limiting academic freedom and free speech by denying federal aid to students who happen to be men. Moreover, there is sex discrimination as no national servive registration or other requirement is placed on female students in order that they become eligible for federal student grants.

The colleges state that withholding federal government grants and loans to enforce military national service registration "endangers the diversity of college student bodies by curtailing the ability of certain groups – such as those with limited financial means and those holding pacifist views – to attend. Forcing some students to sacrifice federal aid and a college education will have a profound impact on the character of these colleges' learning environments."

Arguing the case for the administration solicitor general Rex E. Lee adopted the "law and order" approach. "You comply with the law and you have no penalty. What is the price? The price is zero . . . The non-realization of an economic benefit that an individual would like to have does not amount to punishment."

The colleges bringing the case are Haverford and Swarthmore in Pennsylvania, Oberlin in Ohio, and Earlham in Richmond, Indiana. Their total enrolment is 8,000. All but Oberlin were founded by Quakers.

Genetic experiments face legal barriers

from Barbara von Ow

MUNICH

Genetic experiments with human beings, a topic of public controversy in West Germany for some time, may become the subject of official legal regulations.

In a recent interview, research minister Heinz Riesenhubr said a legal initiative by the state could become mandatory in areas where human dignity was threatened.

His statement followed a recent motion by the social democratic opposition party (SPD) to set up a special commission in the Bundestag with the aim of investigating the social consequences of modern genetic technology and making recommendations for necessary legal regulations.

This coincided with the opening of a large genetic research centre in Munich last month. Run jointly by the university, the Max-Planck society and the chemical industry, it is the fourth in Germany. The others are at Cologne, Berlin and Heidelberg.

Herr Riesenhubr said he planned a definition of the ethical limits in genetic research. Areas where genetic manipulation went too far were the use of so-called surrogate mothers, the development of liveable chimeras from human and animal cells and the cloning of identical human beings. One of the most problematic conflicts could arise from the possibility of extending human life expectancy by the means of genetic engineering, he noted.

However, for other areas of genetic technology such as the development of bacteria for environmental use, he preferred "simple guidelines" rather than a binding law, the minister said. Such guidelines were already being elaborated. No legal steps would be taken until the investigations of an expert commission set up by himself and the liberal justice minister Hans Engelhard, were concluded, he added.

Presenting their motion last month, SPD opposition politicians said the special commission, would be made up of deputies and scientists, who should examine the possibilities and risks of new biotechnological methods.

The 1978 safety guidelines for genetic experiments should be extended to industrial use, they stressed. In view of the fact that some 200 companies work with biotechnological methods worldwide, binding regulations were a problem.

Philosophers learn ethics

Harvard University plans to establish a postgraduate training programme for philosophers who will eventually teach courses on professional ethics in disciplines such as medicine, law and business. Harvard's president, Mr Derek Bok, commented recently that "what is missing in this country is any programme to prepare people rigorously to teach these courses that is comparable to the kind of systematic preparation that people get to teach in most other courses."

Mr Bok said that a special committee has been named to develop the programme. If founded it would be the first of its kind in the United States.

Finding funds for the programme and someone to head it are likely to be the major obstacles the committee will face, said Mr. Bok. The programme will draw on teaching staff from across the university's many disciplines. Students will help design their own study plans, best suited to their interests. The year-long programme will probably begin with a basic course on ethics instruction, coupled with tutorials and followed by electives chosen from any area within the university.

Same skills

A panel reporting to the United States National Academy of Sciences has determined that secondary school graduates immediately entering the workforce need "virtually the same" academic skills as those who will pursue higher education.

Vocational and technical training are no substitutes for education in the "core competencies", the panel wrote in High Schools and the Changing Workplace.

Germany 'top in league'

Public and private investment in research will rise by a nominal 6 per cent to more than DM50 billion in West Germany this year, giving the country a top position by international standards, according to a leading research institute.

However, West Germany's capacity of scientific personnel could not compete with that of the United States or Japan, which had expanded dramatically over the past ten years, the Battelle Institute in Frankfurt noted. Although research staff had doubled in Germany over the past 20 years, it had more or less stagnated since the late 1970s.

According to a recent government report, total research investment rose by 6 per cent over the past two years to reach DM46.8 billion in 1983, or 2.8 per cent of the nation's gross national product.

Submitting the report, research minister Heinz Riesenhubr said state expenditure on research would rise to DM13.3 billion by 1987 from DM12.1 last year.

With an annual growth rate of 4.8 per cent military research and development will replace energy research as the top priority. Only a modest 2.5 per cent annual rise is foreseen for the construction and expansion of university facilities.

However, Riesenhubr stressed that the universities remained the "basis of research in Germany". Last year DM7.2 billion, more than half the state's investment on research, were spent on the universities, where over 60 per cent of the non-industrial researchers were employed.

Possibilities to increase investment in research were limited, the minister said, adding that public investment in research was only justified if the state had taken on special responsibilities. Furthermore, present capacities could be used more efficiently through a closer cooperation between science and industry, he noted.

Violence against Tamils 'was planned'

from D. B. Udalagama

COLOMBO

The aim of the violence at the University of Peradeniya in May and June last year against Tamil students was to evict the Tamils from the campus. In complete defiance of authority the attackers succeeded in achieving their ends.

This is reported to be the finding of a three-man committee appointed by the government last year. The committee is said to have submitted a volume report to the government in December, but neither the government nor the ministry of higher education has released the report and the mainstream media, important sections of which are state-owned or state-controlled, have been silent.

The Communist Party newspaper, *Forward* recently published what it said were extracts of the report and the *Saturday Review* which is published in Jaffna and represents Tamil interests, reproduced the *Forward* story. There has been no confirmation or contradiction from any official source.

According to the *Forward* report, the committee has found that the violence did not erupt spontaneously but represented an organized campaign showing careful planning.

It quotes the committee as saying that the campaign may be described as racist and was to evict the Tamils from the (Peradeniya) campus. In complete defiance of authority and acting with blatant violence, the attackers succeeded in achieving their ends.

It also quotes the committee as saying: "The following offences were committed: intimidation, disorderly conduct, unlawful assembly, storming of halls, abuse, wilful damage to property, looting, restraint, forcible entry, incitement to violence, physical assault, psychological violence."

The committee is reported to have identified a number of persons responsible for and taking part in the racist violence. A student named as a ringleader is said to have been appointed an acting assistant lecturer.

Professor flees Transkei

from Carolyn Dempster

JOHANNESBURG

A senior academic at the University of Transkei fled the homeland last week to escape detention by the security police.

This is the latest development in the saga of disturbances at Unitra which have thus far resulted in the deportation of five lecturers and the detention of 137 students by the Transkei authorities.

Professor Nico Cloete, head of the department of psychology at Unitra, made the dash to freedom in a borrowed car after being warned by friends that the Transkeian security police were looking for him.

His departure came less than an hour after he proposed a motion of no confidence in the principal of Unitra, Professor B. de V. Van der Merwe at a meeting of the university senate.

In Durban, Professor Cloete alleged that the disturbances at Unitra stemmed from academic and financial mismanagement of the university by senior administrative staff. He claimed that the university authorities had invited the Transkeian security police on to campus which led directly to the confrontation between students and heavily armed police last month and finally to the closure of the university.

A three-man commission of inquiry has been appointed to investigate the causes underlying the unrest.

In two other developments, the Transkei Supreme Court ruled that Prof B. de V. Van der Merwe, as principal of Unitra had no powers to force students to sign undertakings to attend lectures and not hold meetings. This was one of the preconditions stipulated by the principal for students who wanted to return to classes.

In the second case, the Supreme Court ruled the suspension of a Unitra student by Prof B. de V. Van der Merwe during the course of the disturbance as invalid.

The Transkei authorities later released all 137 of the detained Unitra students and security charges against them have been dropped.

At the University of the Western Cape, 2,000 "coloured" students ended a two-week long lecture boycott after negotiations with the university authorities.

The student grievances revolved around inadequate accommodation, transport problems, the shortage of bursaries, the year mark system and the cafeteria.

Vice rector Professor J. J. F. Durand stated that all of the issues were receiving the close attention of the university authorities.

South Africa's annual republic day holiday on May 31 was marked by peaceful anti-republic day rallies at at least two universities.

At the University of the Witwatersrand, about 2,500 students staged a three-hour march and protest on May 30 as a show of solidarity with boycotting students and scholars countrywide.

At the University of the North, which caters for black students and was one of the campuses at the centre of student unrest in recent weeks, a peaceful protest rally was held.

French back down on teaching hours

from David Dickson

PARIS

The French government has agreed to revise a plan to impose a substantial increase in the minimum amount of teaching required of all university academic staff, the minister of national education M Alain Savary, announced last week.

The decision was contained in a broad revision of university career structures approved by the French council of ministers after 18 months of often heated discussion with the academic community.

The main thrust of the revision has been to introduce a new career structure which responds to the government's interest in introducing a more professional orientation to university courses without a major increase in financial resources, to the universities' own perception of a relatively chaotic system of multiple academic categories, and to demands for an opening up of promotion prospects from trade unions representing teaching staff.

Meeting these different pressures has not been an easy task for the government. Successive drafts of its proposals have successfully alienated either one side or the other of the academic community and one produced at the end of March received almost universal condemnation.

The unions, particularly those such as the Syndicat National d'Education Superieur representing the more junior teaching staff, has been particularly critical of the government's refusal to adopt its long held proposal for a single professional category covering all academic staff as the best way of rationalizing the current diversity of positions.

Both sides were united in their antagonism to new rules, introduced on a temporary basis last September for the current academic year, which would have specified that each member of the academic staff be required to provide a minimum of either 128 hours of lecturing a year (four hours a week over 32 weeks, compared to 25 weeks currently), or 192 hours of directed study or 288 hours of practical work with students.

The government had previously responded to these criticisms by stating that it would permit a limited amount of flexibility in these hours, for example by allowing an individual to meet as little as half of these requirements, providing that the other half was made up by other members of the university staff.

Faced with growing opposition from virtually all directions, and less than enthusiastic about provoking a major confrontation with the university community at a time when he is already deeply involved in national controversy over the government's proposals to integrate private and state schools, M Savary has decided that the time has come to compromise.

The final form of the government's decision on new career structures retains its original proposal to introduce two separate professional categories, one of full professors appointed after demonstrating their ability to direct research, and the other of associate professors (known as *maitres de conferences*).

It also contains some of the less controversial changes which the government has been planning. These include the introduction of sabbatical leave for all academic staff, and various measures designed to make it easier to arrange for the temporary exchange of individuals between universities and industry.

The government has also agreed to increase the role of university presidents and their advisory councils in allocating teaching and other tasks within universities.

Most significantly, it has backed off in its attempts to require a minimum amount of work from each academic member of staff, leaving this again to the responsibility of individual universities.

Canadian peace initiative

by Thomas Land

A global peace research institute intended to promote fresh initiatives in arms control negotiations is to be established shortly in Canadn.

It is to collaborate with the United Nations Institute for Disarmament Research in Geneva and to participate in the study programme of the UN University which involves many institutions in countries opposed to each other in various conflicts.

The Canadian centre is planned eventually to attain the stature of the International Institute for Strategic Studies in London and the Stockholm International Peace Research Institute.

Its establishment reflects Canada's profound concern over the inability of the super powers even to discuss a joint approach towards arms control while being engaged in a strategic nuclear arms race leading, according to authoritative current studies, to the doubling of their arsenals within a decade.

The institute is to analyse the cancerous growth of an industry which already employs a fifth of the global workforce of qualified scientists and engineers in military activities consuming a quarter of all investment devoted to research and development.

Canada's proposed Institute for International Peace and Security will gather, collate and digest the enormous volume of information now available on arms control issues, and promote potentially effective fresh ideas and proposals regardless of their source.

It will encourage scholarship and stimulate informed public discussion on matters related to peace and security. And it will coordinate and assist work already under way at Canada's universities and cooperate in the studies of fellow institutions abroad.

The centre will have a modest initial budget of $1.5m for the 1984/85 fiscal year, rising to $5m by 1988/89. Although its funds will be provided directly by the Canadian Departments of External Affairs and National Defence, its freedom from governmental interference will be provided by an act of parliament and defended by an independent board of directors.

Alienated from a place in higher education

from Charlotte K. Beyers

PALO ALTO

In California it is estimated that by 1990 more people will speak Spanish than English. Hispanics already comprise 32 per cent of the kindergarten enrolment and 16 per cent of the senior high school classes. But only 6 per cent are enrolled at the University of California's nine campuses.

Tuition at the University of California comes to $9,000 (£6,500) a year, a high sum for parents with many children, low-paying jobs and no recourse to state or federal aid.

Jose Garcia, aged 17, has been admitted to the University of California at San Diego, but has almost no chance of enrolling. "Why am I being penalized? I had no control over coming to the US. I understand now that I am here as an illegal. I did not know this when I came with my parents when I was eight years old," he says.

Jack Wright, a counsellor at Franklin High School in Los Angeles is sympathetic. "I can feel his anxiety. These students are scared, perplexed, angry and frustrated," he says.

The 1980 census counted 2,666,000 illegal immigrants in California, 750,000 of them from Mexico. Last year, the border patrol arrested 438,122 illegal immigrants along the California/Mexico border.

The greatest concentration of these fugitives occurs in an around Los Angeles. Joan Ramsey, college counsellor at Huntingdon Park High School, south-east of Los Angeles, where enrolment is 85 per cent Hispanic, estimates that a third of the students are illegal immigrants.

Of 150 students with A and B grade averages qualifying for four-year colleges Ramsey believes that at least 60 per cent have no papers.

To qualify for state or federal aid, the students must show where they were born. "If a student is asked to show his papers, it can be terrifying because it can jeopardize an entire family," Ramsey said.

Legislation is pending that may help some. If not all undocumented residents. Assemblyman Art Agnos, a Democrat from San Francisco, sponsored a successful bill to entitle refugees from south-east Asia to state residency after living in the US for a year and a day.

Agnos supports a bill that would qualify undocumented aliens as residents if they can show proof of California residence for seven uninterrupted years.

Graffiti at the faculty of medicine in Buenos Aires

A friendly style of writing on the wall

Nick Caistor finds a spirit of creative chaos revitalizing Argentina's principle university

Faculty walls daubed with graffiti often cause enormous irritation. In Argentina, where the walls were scrubbed clean during seven and a half years of military dictatorship, they are a sign of new life: "No ideals – no deal;" "Franja Morada for Alfonsin;" "Vote Luder President;" "Where are the disappeared?"

The recently begun academic year 1984/85 is the first under a truly democratic government for a decade. The atmosphere of lively turmoil, of determination for change, is immediately apparent in the faculties of Buenos Aires University, which with more than 100,000 students has two thirds of the country's university population.

The students have regained their right to participate in the university councils which administrate the faculties. Though many of them follow Peronist or radical (Franja Morada) party lines, there has as yet been none of the political violence that became endemic in the faculties during the early 1970s, and all are pressing President Raul Alfonsin's government to discover exactly what happened to the 2,000 or so students who "disappeared" during the period of military rule – and if possible to bring those responsible to justice.

Another fight in which the students are active is that of rejecting any restriction on numbers entering the university. During their stay in power, the military authorities, as well as repressing students and staff, cut funds for higher education and sought to reduce the intake. Now the students are proclaiming that university education is a right for anyone who finishes secondary school. The authorities have compromised this year by bringing in an introductory course before the academic year proper to act as a filter. Of the 6,000 new intake of medical students at Buenos Aires University, for example, some 25 per cent dropped out before the first year began in earnest after Easter.

The students in Franja Morada group have been causing more of a stir with their demands that the state take over the private universities. These grew enormously in importance through the 1970s, since they could guarantee academic peace and often had greater economic resources. As with the French government proposals, the Argentine students' demands have run into tough opposition from the Roman Catholic church, which sees them as an attack on the freedom of religion.

The heat of the argument has even led the Archbishop of Mendoza, where there is a large Catholic university, to denounce the "bolshevization" of the universities. The last thing the Alfonsin government needs at the moment is conflict with the church, and the president (himself a devout Catholic) has been quick to reassure the church authorities he respects the important role they play in Argentine education.

President Alfonsin's most difficult task in education has been to find people who were not tainted by their collaboration with the armed forces or politically unacceptable Peronists. As minister he has appointed Carlos Alconado Aramburu, who previously served 20 years ago during what is seen by many as the golden age of Argentine education, brought to an abrupt halt by military intervention in 1966.

This led to many teachers and professionals leaving both university and country, and saw the start of an overall decline in the standard of university education that reached catastrophic proportions under the military governments of the late 1970s. As in so many other areas of public life, therefore, Alfonsin is trying to wipe away the effects of the past two decades and start again, hoping that things will turn out differently this time around.

The new dean of the faculty of architecture, Dr Mario Dujovne, is one of this generation of professionals who left the university in 1966 and are now trying again. Among the many problems facing him is that of having to completely revise the syllabus. He pointed out that over the past eight years, there was no course of architectural drawing at all. Studies were based on the learning of facts and formulae, with no consideration of the practical side of architecture.

Dujovne, and the other deans like him, also have to decide what policy to adopt towards the teaching staff. Many people are calling for all those who were appointed to teaching posts during the military governments to be sacked. Teachers who were dismissed between 1974 and 1983 are now claiming their posts back. On top of all this, the economic resources available are barely sufficient to cover salaries, let alone equipment or any new development ideas. Dujovne typifies the new spirit in the universities in his determination to bring about change, renewing the staff, improving the courses, and producing properly trained architects once again, "something we haven't seen in Argentina for two decades".

The kind of stability that is a prerequisite for a meaningful university education has never been a feature of Argentine history. But if the radical party's election victory over the Peronists really does signal the start of Alfonsin's promised "100 years of democracy", there may be many generations of graffiti to admire on faculty walls.

BOOKENDS

Confronting an embryonic issue

Jon Turney talks to Peter Singer about his new book on the ethical issues surrounding test-tube babies

The first test tube baby, Louise Brown, born by Caesarian section.

Every physical invention is a blasphemy, but every biological invention is a perversion. The British biologist J. B. S. Haldane first put it like that in an essay on test-tube babies and similar ideas 60 years ago. His observation points up the enduring power of biological research to stir profound feelings about who is allowed to do what to whom, feelings now triggering a fierce debate in anticipation of the Warnock report to the British government next month.

In spite of this strength of feeling, there has been little detailed debate about the future new developments in biology may offer. That future includes frozen embryos, surrogate mothers, sex selection and human genetic screening, with more distant prospects of cloning and genetic engineering. All present perplexing social and ethical problems.

"But there seems to be a reluctance to confront these issues until they are upon us," says Peter Singer, professor of philosophy and director of the Centre for Human Bioethics at Monash University in Melbourne. His new book, *The Reproduction Revolution*, is a substantial study of the immediate issues raised by "new ways of making babies".

Australia has been second only to Britain in the forefront of work on test-tube babies or, more properly, *in vitro* fertilization (IVF). The Americans were largely kept out of the game by grant agencies uneasy about the goal of fertilizing human eggs outside the body.

Singer, an Australian philosopher, was drawn to the work through contact with one of the pioneering groups. He came to Monash in 1977, and brought a strong interest in applied ethics: "Trying to bring philosophy to bear on practical problems that concern us all". That interest prompted earlier books on civil disobedience, animal rights and sociobiology.

At Monash, he found Dr Bill Waters doing IVF work. And the medical researchers were looking for help from other disciplines: they were experts only in medicine. The topic immediately took Singer's interest. This was the area where scientific developments were taking us beyond the consensus of settled ethical beliefs. "Work at Monash was reasonably advanced," he recalls, "and there was no reason why it should stop at helping infertile couples. There was no public debate at all at that stage, and it seemed an area worth taking up because the ultimate possibilities are so far reaching."

He found the field fairly open then. There was little philosophical discussion of IVF, and the basic technical procedures were quite easy to understand. Some journalists had written books on the coming "biological revolution", with titles like *Second Genesis* and *The Biological Time Bomb*. But they were unsatisfactory. "They tended to say: 'this and this could happen – Oh! Shock, horror, what can we do?', not, what are the arguments for and against allowing this to happen?"

He saw the journalists' problem, that it was difficult to put arguments carefully and still draw a popular audience. But he felt once they had helped put questions about the new biology on the agenda they had virtually nothing else to say.

Professor Singer's book had ambitions to do more, to put arguments, and make specific recommendations. "Then it's up to other people to say why our position is wrong. I don't expect everything said to stand up." To develop the arguments he recruited Deane Wells as co-author. Wells had a background in philosophy and law and worked at the bioethics centre until an unexpectedly strong swing to Labour put him in the Australian parliament in the last election.

Of all the questions treated in the book, from IVF for lesbian mothers to genetic manipulation, which had they found it hardest to agree on? One was the immediately topical issue of surrogate motherhood, where a woman bears a child for another who has donated an embryo for fertilization. Deane Wells's first inclination was to say that commercial surrogacy should be banned outright, a line likely to be followed by Warnock.

Singer took an intermediate line: "I thought commercial arrangements were less desirable than using volunteers, but some compensation for nine months pregnancy and childbirth did not seem unreasonable." They resolved the difference of opinion by agreeing "a sort of regulated surrogacy, where compensation rates would be set by some kind of surrogacy board". The free market was ruled out.

A thornier problem was the more distant prospect of growing spare human embryos for research, or maybe for spare parts. Professor Singer recalled both had agreed it was unacceptable to cause embryos pain. "But there's a question that falls short of that. Suppose you could grow the embryo but destroy its nervous system so it didn't really suffer." It was a gruesome prospect, but one he was prepared to consider as a serious philosopher. "Eventually Deane persuaded me that the consequences of having beings that looked just like babies but were insentient, and were being used to farm organs, would be too serious."

The two authors' agreement on the whole spectrum of issues wasn't too surprising – "the committee wouldn't have appointed someone who I felt I couldn't work with". More of a surprise was to hear the mild-mannered Singer, a vegetarian committed to animal rights, calmly discussing baby farming. But he is equally committed to looking at all the possibilities thoroughly.

At one point, he and Wells write that piecemeal social engineering is the best way forward in this area, and he accepts that as a summary of their position. "There are arguments used against the whole thing – having rejected those, the only thing is to proceed cautiously a bit at a time and see if the good outweighs the bad."

He intends to pursue this approach into other areas over the next few years, first in treatment of handicapped babies. His comments on present and possible future work show the ambivalence of the academic in public debate. On the work of the bioethics centre, he feels the university is pleased to see philosophers [illegible] they are not always obscure or [illegible] from public concerns.

As for his academic colleagues: "Some will see the book as showing that philosophy is starting to [illegible] attention. No doubt there will be others who think I've ceased to do philosophy because it's reached such a level of application."

He hopes to see the bioethics centre, which brings together philosophers, lawyers and sociologists, become self-sustaining, so he can move on. Again, the long-term options betray a tension between academic and public responsibilities. "I'm pulled in two directions. One is to get back to fundamental ethical theory – there's something a little unsatisfactory about doing applied ethics if you haven't made your foundations totally solid."

The other ambition is to outdo the journalists who wrote books like the test-tube baby sagas of the 1970s. "I'd like to really cast loose from the academic background and write something that would be fully accessible to the general public." His book on animal liberation had had a fairly wide readership, for example, but some people still told him it was too difficult.

With these aspirations, would he find time to serve on the personnel commission he and Wells call for to help governments deal with the revolution in reproduction? "It would be fascinating. There's a lot of work to be done, and it's always breaking new ground." He is convinced such groups will have to be set up – governments will need the advice.

The present pattern of short-term committees on specific issues is illogical, he argues. "Setting up a committee like Warnock's, giving them time to get to know each other, to work together, develop expertise in an area, then saying; thanks for your report, you can all go home – that does not seem to make any sense."

Perhaps a standing commission would help scientists get a faster response to research proposals, as well as tackling some of the social issues Singer and Wells tell the story of. A review of IVF by an ethical committee advising the US department of health, education and welfare.

The committee looked at the implications in 1978, the year the first IVF baby Louise Brown was born in Oldham amid world-wide publicity. Four years later, when the Australians were writing, the American secretary for health had yet to act on the committee's findings – favourable to the researchers, with some qualifications. By then, the urgency had gone for the original, hopeful researcher. He died waiting.

The rest of the book makes one thing clear. Politicians can't go on dealing with the new powers to control reproduction – whether blasphemous or perverted – by masterly inactivity.

Patricia Santinelli looks at two aspects of work preparation in Northern Ireland's Youth Training Programme

Working out an active solution

"Not very long ago we took a group of young people across the bridge into another part of town, only four miles away, and they were stunned to see that people there were just like them, and were not wearing horns, as they'd been sure they did".

This surprising anecdote – surprising not only intrinsically but because few people in Northern Ireland seem willing to talk about the religious divide, let alone the troubles – was recounted by one of the founders of a youth and community workshop in Castlereagh, a mainly Protestant suburb in East Belfast.

The workshop is one of 42 work preparation units, part of Ulster's Youth Training Programme, of which delegates from a Council of Europe conference on education and training opportunities for young schoolleavers in Europe visited recently. This was the first time the council had chosen to hold a conference in the province.

Perhaps this short tale by Mr A. Morrow, who chairs the management committee of the workshop, encapsulates more than anything the fundamental differences which exist between the YTP and the rest to Britain Youth Training Scheme and between the whole setting of youth employment in the province and the mainland.

Obviously you could find a parallel in the attitudes of white youngsters towards members of ethnic minorities and vice versa. But there is nothing on the mainland to equate the extreme polarization of religious views, attitudes and fears which has partially resulted from the civil disturbances.

The major problem of unemployment – a fact there before it hit the mainland – has grown worse with the decline of traditional industries in agriculture, textiles, engineering and shipbuilding. It has not been made up by the slow development of new ones hampered by the lack of investment.

Male unemployment now stands at 26 per cent, but in areas like Dungannon and Strabane it is 50 per cent and in Newry 40 per cent. While youth unemployment is a relatively recent phenomenon it is possibly one of the province's most serious problems, with 41 per cent of young people under 25 out of work.

Workshops like Castlereagh, which are funded by the Department of Economic Development, are usually situated in areas of high unemployment and are organized by community groups representing industrial, educational, youth and community interests.

Its staff like David Watt, the workshop manager, who was a redundant systems analyst in engineering, are mainly recruited from the unemployment register.

The workshop trainees have been in the last stage of refurbishing the workshops which had been rebuilt from the ground floor upwards. The life has just received a fresh coat of paint under which "interesting" graffiti were still visible.

The workshop is situated in the Lisenhall shops complex opened in June 1982. It now has 13 staff and some 53 trainees. Most of the young people on the scheme are for families hit by unemployment, who are living on nearby estates built to rehouse people from the slums. At least 10 per cent of the youngsters had been reported for anti-social behaviour before coming to the workshop.

At Castlereagh, as in other units, they receive broadly based training in a range of activities for up to a year which includes day release to further education and work experience with employers.

The workshop has eight training sections – building and joinery whose trainees carried out most of the refurbishing; office practice; light engineering; catering; painting and decorating; handicraft; and personal grooming.

The hair and beauty salon, where personal grooming takes place is together with catering and office practice one of the most popular sections. According to the manager, it has been instrumental in boosting trainees' confidence. This had altered dramatically as their personal appearance improved.

Training in all the units is given meaning by encouraging the workshops to provide goods and services which do not compete with existing businesses, but which are of benefit to the local community.

The handicraft section for example, had made a beautiful selection of toys which trainees said sold remarkably well. The catering section not only prepares food for the other students and staff, but for old age pensioners. Pensioners also get free haircuts, and so do hospital patients. In addition work-shop trainees do work for the social services, such as repairing doors and windows.

But possibly one of the trainees first achievement has been the writing of a play for puppets, typed on a word processor. The puppets and their clothes were made by the trainees themselves and the stage was being built in the building and joinery section. The whole show will then be taken round to local primary schools.

According to Mr Watt, about 70 per cent of the trainees get jobs, mainly in catering, office work and engineering, the latter because of the workshop's own good contacts.

Newcastle is a seaside town experiencing a mini boom from Irish tourists who have gravitated to the north both for its cheaper hotels and alcohol. It is also a budding conference centre, a seasonal resort and is fast becoming a dormitory town for Belfast, all of which are having some beneficial effect on the local economy and employment prospects.

Newcastle College of Further Education is one of 25 out of 26 colleges which are participating in the YTP, offering a wide range of courses mainly for 16-year-olds and a small number for the 17 plus category. Like other colleges it runs two types of courses, work preparation and youthways courses – some 17 colleges do the latter.

Newcastle decided to house its YTP programme in what was the Homa factory, now known as the Castlewellan Road annexe.

Trainees have a choice of four type of work preparation courses in catering, hotel work, child care and community, engineering and building trades.

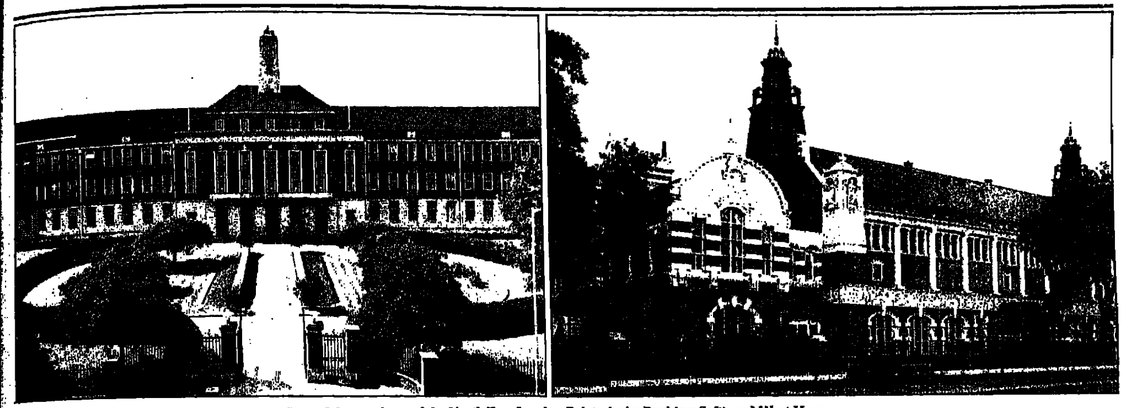
Work preparation courses last up to 45 weeks and either give vocational preparation in specifically job-related areas or consist of more general courses unrelated to the employment sector.

According to Mr Joseph Attridge, the principal, employers think very highly of their trainees. Hotel and catering, and the building trades are the main employers of trainees in the area, the latter taking nearly all of them.

"Community and child care are not so successful in providing employment because caring institutions tend to recruit young people at the age of 18. Engineering is not a high recruiter either, there are few places in the area, and it is a generally depressed field in Northern Ireland, with the exception of shipbuilding and aircraft," Mr Attridge said.

The college has been able to make the Homa factory the technology centre of the institution by moving all its workshops there and developing a computer centre. It has also led to new enterprise with students developing a prototype computer trolley which is being sold in batches of ten to the South East Library Board.

Another enterprise has been the nursery nurse group which started originally to provide facilities for young people and staff on the course. Since then it has graduated to provide nursery places at 25p each for Newcastle's poorer community. As the result there is a now long waiting list.



Two of the precincts of the North East London Polytechnic: Barking (left) and West Ham

Last of the big spenders

Can a polytechnic lose 40 per cent of its staff in five years and survive? In the third of our visits to polytechnics undergoing quinquennial reviews, Karen Gold talks to some of the people at North East London.

Picture a polytechnic directorate dining room. An oval oak table, hessian wallpaper, local authority monogrammed cutlery. Solid, respectable, not too lavish. A handful of modern but not outrageous prints on the wall.

A conversation on the public image of polytechnics. "We've got a bad name from a few unrepresentative places," says the director. "We've never even had a student arrested here. But people imagine every polytechnic is like NELP."

NELP: the poly the good boys love to hate. The place students still occupy. The last of the big spenders. If NELP really lived up to its image, the Council for National Academic Awards would never set foot in the place. What has happened to NELP between the council's visit in 1979 and its return this year?

Well, for a start it has lost £6m-plus from its annual budget. It loses £1.7m in 1984/85 from its central allocation from the advanced further education pool, and another £300,000 from its three local authorities, Barking, Neasham and Waltham Forest, who will give no topping up at all from 1985.

When all the sums were done, the poly was due to have a £2m gap between income and expenditure by 1985. Lots of other places would say they deserved it. For as long as anyone can remember, NELP has topped the polytechnic spending lists. In 1980/81 its teaching staff costs were around one third higher than most polytechnics. Its non-teaching staff costs were 50 per cent higher. Its "further funding" – the pre-National Advisory Body cushion giving extra money from the pool each year to institutions with high historic costs – was twice as much as its nearest rival.

Its activities were scattered among numerous buildings, where in 1980/81 staff worked to staff/student ratios of between 7.3:1 (laboratory science) and 5.5:1 (art and design). (The national figures in that year were 8.5:1 and 6.9:1; NELP staff actually taught *more* hours per week than most lecturers on the higher ratios, they just taught smaller groups.)

In 1981, the then director, Dr George Brosan, announced the first of what has become an annual event at NELP: redundancies. In a press statement he said "any further reductions will seriously damage both the excellence and choice of our many courses".

At the same time the joint NELP unions prepared a briefing paper on the case for the polytechnic governors. It said "the raising of staff/student ratios across the polytechnic will inevitably worsen the quality of education students receive".

At that stage NELP employed 755 academic staff. The poly was proposing to lose 40. It was the first of four waves of voluntary redundancies, one per year. The academic staff now numbers around 550.

Between 1979 and 1984, the polytechnic has lost 38 per cent of its teaching staff and 41 per cent of its non-teaching staff. Last year 80 non-teaching staff went. This year 84 teaching staff are to go, most of them having left at Easter. Altogether, more than 300 academic staff will have gone in five years.

NELP is now staffed on the "best practice" academic staffing of Her Majesty's Inspectorate. It is also no longer on the top of the polytechnic spending lists in central services, academic and non-academic staffing. It may be off the top altogether.

Its director since 1982, Mr Gerry Fowler, made a statement on this year's redundancies in the spring. All 80-plus staff could be released without substantial damage to the academic fabric of the institution, he said. "I am certain that the quality of our courses can and will be maintained."

He gives three reasons in justification. One is that NELP was overstaffed. "I wouldn't have begun to defend the position here when I came," he says. He cites the NELP international office, the division of external relations and communications which the poly had in addition to a contract with a public relations firm. A management information centre for the directorate with 27 staff. Eight assistant directors.

The figure of people doing "non-jobs" at NELP emerged at about 40. To replace the rest who have left, he says that teaching methods have changed: students are taught in larger groups and are better qualified on entry.

But adjustments in staffing and coping with the changes are matters for heads of department and course leaders, Mr Fowler says. Some staff have come back on part-time contracts for the summer term, for project supervision and exams. A few applications from key staff were refused, although the refusals were in single figures: "The ultimate safeguard is whether staff themselves are monitoring what they are doing and making sure quality doesn't fall."

Staff themselves are clear that quality has fallen, but not how much, according to David Albery, chairman of the NELP coordinating committee of the National Association of Teachers in Further and Higher Education. Seminar groups have increased from seven to 15 or even 20; there are fewer tutorials; students complain of staff unavailability.

Lecturers have less time for reading, research and marking. They work longer hours and have reduced library and audio-visual facilities. The effect of all that, and of decisions being made on resourcing rather than academic grounds, will only be clear in several years time, he says.

The students' union makes similar points. Course options which fail to run mean at the end of three years some students leave with quite a different degree from the one they expected on enrolling, according to the president Peter Carr.

There are more student appeals against exam and assessed work failures, particularly where unassessed group project work has increased to cover staff shortages and students have worked on projects to the detriment of their assessed work. Students are working harder: the atmosphere is more like a technical college than a polytechnic, he says.

There is also a nine-to-five atmosphere which the students and directorate are collaborating to change: the union has appointed a sabbatical entertainments officer; the poly has sustained the student union grant and is building an extra bar.

There was a brief resurgence of old-style NELP student activity during the redundancy crisis last term: 2,000 posters showing "Fowler: The Butcher of Newham" pasted around the polytechnic, and on one occasion members of the directorate and police huddled in their offices while students outside broke down the door.

But if ever there was an example of a place experiencing the new realism, NELP is it. This time around, academic and non-academic staff were sure that the threat of compulsory redundancy would be carried out. In January when Mr Fowler announced that 45 staff had to go voluntarily by March if compulsory redundancies were to be avoided, he said "it is highly unlikely that such a number of volunteers would come forward". In the event, 89 applied. Everyone was taken by surprise.

There are different explanations, though all agree it would not have happened a few years ago. Mr Fowler argues that what changed most at NELP between 1979 and 1984 is the atmosphere: this time everyone realized that the old days (good or bad, depending on your point of view), were over. David Albery describes it thus: "Staff were saying from January to March, 'We're getting out because we can't stand the pressure and the stress and the insecurity; because we're not doing the job we could'."

With the new realism comes new respectability. NELP now allocates more than 10 per cent of its budget to research. In particular it has prestigious work in chemotherapy and medical-related work in conjunction with London hospitals.

An application is in to the CNAA for a postgraduate degree registration board, to allow the poly to award its own research degrees. Recently – on the casting vote of Mr Fowler – the academic board agreed to set up a working party to investigate professorships.

In the last five years, when student numbers have increased from 5,236 to 5,947 full-time equivalent, the major increases have been in postgraduate courses. Non-advanced work has almost gone. There are five new part-time taught masters' courses, in management, education, education management, medical-radiation physics and biochemical immunology. There are three new postgraduate diplomas.

There are also 11 new first degrees, but five old ones were withdrawn, so the new increase in postgraduate courses actually exceeds undergraduate CNAA ones.

NELP points out in its CNAA submission that it now ranks fifth in polytechnic first-class degree awards. The school for independent studies, the poly's "build a degree" kit which now has 400 full-time equivalents, is to expand and bid for an MA by independent study as well.

There was a bad patch three years ago, when both architecture and engineering degrees lost their honours. But to anyone pointing to that as evidence of declining standards, there is the reply that the architects at least regained their honours four months ago, and the NAB threat to close the course was withdrawn.

The poly has now revised its internal validation procedures, subjecting every course to an annual report and triennial review. Its management wants five-yearly validation from the CNAA but not much else, on the currently popular grounds of bureaucracy and cost. NELP, thinks Gerry Fowler, is now academically respectable enough – "mature" enough, in the current jargon – to deserve it.

So what has really happened at NELP? The answer matters, not only to NELP but elsewhere, because if any polytechnic has been placed to compare the academic implications of generous staffing and conditions five years ago, with the economical "best practice" of today, it is NELP.

Even Mr Fowler has said this time that academic staffing can take no more cuts without the quality of education at the polytechnic suffering. But then that was what Mr Brosan said, back in 1981.

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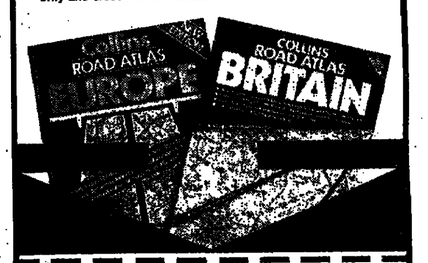

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Graduating in politics and anger

WORLDWIDE

Benny Morris looks at the West Bank's class of unemployed

A class of unemployed, politically alienated university graduates is coming into being in the Israeli-occupied West Bank, with serious implications for the area's future stability and Israel's continued hold on the territory. Paradoxically, the educational boom which is giving rise to this situation began soon after the start of the Israeli occupation, in the 1967 Six Day War.

The problem is now "serious" and will probably become "acute" in the coming years. This is the upshot of a recent study of the situation made by Hillel Frisch, a member of the Jerusalem Centre for Public Affairs.

By the end of the decade, there could be about 30,000 post-secondary school students in the West Bank and the Israeli-occupied Gaza Strip, more than half attending degree-awarding institutions.

There are 14,000 jobs in the West Bank – academic, scientific, technical managerial, clerical – which require high school or university graduates. With a turnover of about 7.5 per cent annually, there will be about 1,100 openings for such graduates each year, leaving about 4,000 local high school and university graduates each year unable to find suitable employment within the area.

Jordan, in order to enhance its position in this once Jordanian territory, has begun making preparations to pay unemployed West Bank graduates a monthly "unemployed stipend" amounting to about $55 to 80 per month. Registration for these stipends with the Jordanian authorities has apparently begun. The stipend – with the higher amount going to engineers and the lower to other professionals – will be retroactive to the date on which the graduates won their degree.

According to the *Jerusalem Post*, there are currently 10,000 West Bank professionals, trained in the occupied territories and abroad, who are unemployed or unsuitably employed, with another 1,000 locally and foreign trained university graduates joining the West Bank labour force each year.

Students at Bir Zeit University: what does the future hold for them?

Israeli observers believe Jordan is adopting this unemployment relief policy mainly for political reasons – to offset Palestine Liberation Organization and Israeli influence in the territory and to increase the elements in the population who are pro-Hashemite.

But these stipends will do little to ameliorate the general problem of unemployed graduates, whose roots lie in the education boom of the past 17 years.

Whereas, under Jordanian rule before 1967, there were no universities in the West Bank and only nine post-secondary school institutions (mostly teachers training colleges), today the territory has five fully fledged universities – Bir Zeit University, which become a university in 1073 and has 2,400 students; An-Najah Al-Watauniyya in Nablus, with 3,000 students; Al-Quds, in East Jerusalem; Bethlehem University, a Vatican backed institution in Bethlehem founded in 1973 with some 1,200 students and the Islamic University (or college) of Hebron, with over 2,400 students. In addition in the Gaza Strip there is the Islamic University (or college) of Gaza, founded in 1979, with 1,600 students.

Five of these six institutions have been recognized as universities by the Association of Arab Universities, though academic recognition by Israeli Universities and the Israeli military government has been more problematic. Graduates of Bir Zeit University and Bethlehem are known to have been accepted for courses in Israeli universities, and one Bir Zeit lecturer once taught in the Hebrew University (until pressure by his Arab colleagues forced him to quit).

Altogether, there are today in the West Bank 19 post-secondary school institutions. Apart from the universities, two colleges – the College of Sciences at Abu-Diam outside Jerusalem and the College of Medical Sciences, in Ramallah – award bachelor degrees (they are affiliated to Al-Quds University).

As to student populations, before 1967 there were several hundred post-secondary school students in the West Bank. Today the number is close to 20,000 though the general population increase in the territory has been only 23 per cent. Proportionately, this figure is almost as high as Israel's student population (of 65,000-odd), higher than England's, and the highest in the Arab world.

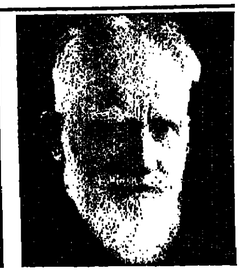
This university population is fed by the annual output by West Bank high schools of 8,000 pupils passing the Towjihi (matriculation), supplemented by some 5,000 who annually pass the Egyptian matriculation exams in the Gaza strip. Israel, with three times the population of the West Bank and Gaza strip combined, has about 16,000 high school matriculants annually.

Demographers predict that the boom in education will eventually lead to a major reduction in the birth-rate in the territories and to emigration from the areas in search of suitable employment in the gulf states or elsewhere. For Israeli annexationists, this is the good news. But this is in the long term. In the short term, the bad news is preponderant: there is a rapidly growing community of alienated graduates, with a high level of political consciousness and a strong nationalist Palestinian aspirations, who are a seedbed for political discontent and anti-Israel violence. The West Bank's roads are often blocked by stone-throwing high school and university students; a large proportion of the locally-bred Palestinian terrorists or guerrillas are high school graduates and many are university students or graduates.

So while the West Bank's total population may not grow steadily or appreciably in the coming years, the segment of it most resentful of the Israeli occupation is multiplying by leaps and bounds.

Step by step into a better future

Asa Briggs analyses the gradual growth of the Fabian Society since its birth exactly 100 years ago



THE WEBB OF DESTINY

MR. SIDNEY WEBB. "I AM WAVING THIS RED FLAG, NOT PROVOCATIVELY, BUT TO SIGNALISE WHAT I HAVE SO HAPPILY CALLED THE 'INEVITABILITY OF GRADUALNESS' WHICH MARKS OUR ROLLER'S ADVANCE".

Famous Fabians: (top, left to right) Tony Crosland, H. G. Wells, George Bernard Shaw; (above) the young Beatrice Webb, photographed by Shaw; (right) Sidney Webb, caricatured.

In the foundation year of the Fabian Society, 1884, there were few intimations of 1984, real or Orwellian. The nightmare lay in the nineteenth century itself. "An army of light is no more to be gathered from the human product of nineteenth-century civilization," wrote George Bernard Shaw, "than grapes are to be gathered from thistles." For H.G. Wells, controversial Fabian of the second generation, the nineteenth century was "a hasty trial experiment of the most slovenly and wasteful kind".

Seeking to secure a social regeneration, the Fabians – critics of Victorian society rather than its victims – ranged widely over the experience of the past, assembled facts about the present, presented them in lucid and accessible form and set out policies for the future.

The Hampstead Historic Society, called at first the Karl Marx Club, to which many of the first Fabians belonged, looked back before the industrial revolution to the civil war of the seventeenth century. Its members wanted to learn from history in order to liberate themselves from it. The accumulation of facts began, not uniquely, with the facts of poverty. "Why are the many poor?"

Fabian Essays, published in 1889, reflected both these preoccupations. Within a month of publication the whole edition of 1,000 copies was quickly exhausted and a second edition of 1,000 was sold out by March 1890. "When the essays were written," George Bernard Shaw, the first of the essayists recalled in 1908, "we were regarded as young desperadoes who had sacrificed their chances in life by committing themselves publicly to socialism: we are now quoted as illustrations of the new theory that socialists, like Quakers, prosper in this world."

They had certainly had an influence on policymaking, a new concept in itself which they did much to canvass. Yet the policies set out in the essays and elsewhere were seldom supported unanimously by all the Fabians. There was no single Fabian line, a point of great importance for the future. As A. M. McBriar has observed: "All the things which Marx's unifying philosophy had bound closely together fell to bits and pieces at the Fabian touch."

There was, none the less, a kind of Fabian consensus. At a time when many sensitive men and women turned to what Alfred Milner called in 1883 "mere denunciations" on the one hand or "the construction of utopias" on the other, the Fabians, particularly under the influence of Sidney and Beatrice Webb, became increasingly concerned with what seemed to them practical objectives. They turned themselves into an information bureau and in their campaigns for reforms in local and national government, in education and in what would now be called social policy – what Shaw called a "humdrum programme" – they (or most of them) were prepared to seek allies wherever they could find them.

They eschewed revolution. "The Fabian Society," wrote Shaw in the famous Tract 70 of 1896, "begs those socialists who are looking forward to a sensational historic crisis to join some other society."

None the less, it would be a mistake to minimize the significance of the first Fabian encounter with the ideas of Marx, who celebrated his own centenary last year, or to underplay the power of feeling behind the first Fabian critique of Victorian society. Marxist economics might be rejected, but it was the young Sidney Webb who wrote that "we would rather face a civil war than such another century of suffering as the present one has been".

It was reason not will – though Shaw made more of "will" than of anything else – which led Hubert Bland, one of the Fabian essayists of 1889, to affirm that "the revolt of the empty stomach ends at the baker's shop". "The transition to socialism could not be crammed into any Monday afternoon, however sanguinary."

Bland believed, however, in a "definitely socialist party, ie a party pledged to the communalization of all the means of production and exchange, and prepared to subordinate every other consideration to that one end". He always distinguished between "socialism" and "shnm socialism". "To bring forward sixpenny telegrams as an instance of state socialism may be a very good method of scoring a point off an individualist opponent in a debate before a middle-class audience; but from the standpoint of the proletarint a piece of state management which spares the pockets only of the commerical and leisured classes is no more socialism than were the *droits de seigneur* of the Middle Ages."

Sidney Webb, quintessential Fabian, was not merely recoiling from violence when he put his trust not in revolution but in evolution. "The social organization," he believed, "is a very complicated machine, and as each item of it is endowed with nerve tissue highly sensitive to pain, I am much afraid of tinkering with it." There was an obvious preference for order here, struggles and as the necessary condition for the approach to the individualistic ideal". "The opposition commonly assumed in contrasting the two is an accident of the now habitual confusion between personality and personality, between a man's life and the abundance of things he has," Olivier went on.

For many early Fabians, as for other socialists, with whom they often allied themselves, Fabianism became a way of life rather than a system of thought. Few efforts were made to advance the cause by attracting large numbers of members – except in 1893 – and the lecture (sometimes made permanent in the tract) was the centrepiece, not the demonstration. The twentieth century summer school was to become the favourite rendezvous.

Historians of the movement have chosen to concentrate on the often fascinating relationships between the leading Fabians rather than on Fabianism from below. The have noted the role of the provincial Fabian societies – there were over 40 of them by 1892, with a membership of about 1,500 – but they have usually turned back to the argument between the old gang", as it thought itself, and newcomers. Margaret Cole, married to one of the most dynamic of the twentieth century newcomers, G. D. H. Cole, has been one of the few historians to examine the dynamics.

The most famous of the twentieth century newcomers, H. G. Wells, still captures the limelight as he did at the time. His famous *Misery of Boots* pamphlet of 1907 was the propaganda of heat rather than of light, and his reactions to his colleagues and his manoeuvres prompted what Norman and Jeanne Mackenzie have called the most interesting of all storms in a Fabian teacup. If centred not only on the role and character of propaganda and the organization of the society but on questions of morality, particularly sexual morality.

Beatrice Webb was right to doubt whether Wells had "the skill and the persistence and the real drive to carry a new departure", but to fear his "recklessness". She made a desperate attempt, however, to keep her judgments straight. "I think it is important *not* to dislike him . . . We must stand by him for his own sake and for the good of the cause of collectivism." The Webbian cause was thus specifically so defined in 1906, the year of the great Liberal triumph; and Beatrice was never to be entirely happy in the Liberal years from 1906 to 1914.

The extent of the influence of the Fabian Society on the young Labour Party in the years before 1914 is a matter of debate, but there is no doubt about the extent of the contribution of Sidney Webb to the making of the new constitution of 1918 and the report Labour and the *New Social Order*. The extent of the subsequent influence – one of many different influences on the growing party – provoked an inevitable reaction; and Fabians of a different generation, many of them increasingly uneasy about "collectivism", were driven to argue, as C. A. R. Crosland did, that it was time "to stop searching for fresh inspiration in the old orthodoxies and thumbing over the classic texts as though they could give oracular guidance for the future". "If they wish to seize their opportunity Fabians would do well to avoid dwelling too long on their glorious past," Nicholas Bosanquet has added in the centenary year.

It is an obvious point. Yet any sensitive historians of the Fabian Society – and they would certainly want to qualify the adjective "glorious" – must note the curious parallels between the 1880s and the 1980s. The economic system generates unemployment and conflict. The government of the capital city is in doubt. There are odd patterns in politics (which have disturbed the Fabians themselves). The role of the law – and of the police – is questioned.

Yet what is missing, among other items, is the sense of outrage against the century which was so strong among the victims and the critics of the nineteenth century. The sense of the possibility, even the inevitability, of a "better" society is missing too. Concern for the international scene, which interested the first Fabians less than the domestic scene – and often divided them – is greater, but that is largely a product of twentieth century war and its aftermath.

Fabian preoccupations remain relevant. Indeed, even the forbidding title of Well's first contribution to Fabian thinking has a topicality about it – "The Question of Scientific Administrative Areas in Relation to Municipal Undertakings". The nicest article Fabian comment has a topicality too – Auberon Herbert's remark to Beatrice that she and Sidney would do a lot of harm and be happy doing it.

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The man who brought news from nowhere

The appeal of the Fabians (with the notable, though limited, exception of the Fabian Colonial Bureau) has remained largely British; that of William Morris has transcended national boundaries. Because of his work as a designer he has been directly (and rightly) related to the development of the "modern movement" in art, design and even architecture, the subject about which he wrote most. Because of his particular brand of socialism he has been widely read in East and West and has provided ammunition for critics of contemporary society both in capitalist and communist countries.

Like the Fabians, Morris was in revolt against his century. "Apart from the desire to produce beautiful things," he wrote in 1894, "the leading passion of my life has been and is hatred of modern civilization. What shall I say concerning its mastery of and its waste of mechanical power, its commonwealth so poor, its cesspools of the commonwealth so rich, its stupendous organization for the misery of life?"

Morris did not turn to active politics until 1876 and he did not join a socialist organization until 1883. Yet in a letter of January 1881 he sent "a word of hope" to a friend for the new year, "that it may do a good turn of work towards the abasement of the rich and the raising up of the poor, which is of all things most to be longed for, till people can at last rub out from their dictionaries altogether those dreadful words rich and poor".

Intense belief in the possibility of creating a society of equals was a hallmark of Morris's philosophy. He came to argue further, however, that only in a socialist society could art flourish. Drawing deeply on Ruskin, who had directly and eloquently related the state of art to the conditions of the worker, Morris went further in his conclusions. Indeed, it is remarkable how strongly his observations and his insights parallel those of Marx whom he did not discover until 1883.

Unlike Marx, however, he worked with his hands and it was through his activity as a designer of objects that he approached the design of society. "Socialism is an all-embracing theory of life", he argued, "and as it has an ethic and a religion of its own, so also it has an aesthetic . . . To the socialist, a house, a knife, a cup, a steam engine, or what not, anything, I repeat, that is made by man and has form, must either be a work of art or destructive to art." The true socialist conceived the lack of art in the nineteenth century as "a disease peculiar to modern civilization".

There was little obviously in common between such a view of socialism and that held by most of the Fabian leaders, and in practice there were often sharp differences between Fabian tactics and those of the socialist groups with which Morris was associated. Morris often argued as in *News from Nowhere* that revolution was necessary and sometimes that it was desirable. Yet there were Fabians who were Morrisites as well, and it was Shaw who described Morris as the greatest socialist of his generation.

There are still people who admire Morris's books and tapestries and wallpapers but who try to ignore completely the fact that he was a socialist. He can never be adequately commemorated in a lecture; he needs an exhibition.

Thais now have a greater chance of higher education. Ben Barber reports

Teaching a cast of thousands

Fifteen minutes before his political science class begins, Orlan Kongnarsuk leaves the table under a thatched roof where he'd been studying with friends and hurries to find a seat close to one of the 20 television monitors dangling from the ceiling in a vast hall seating 2,000. Five storeys below him, the teacher will lecture to another packed hall of 2,000 while his televized performance is screened on each floor above him.

With classes numbering over 10,000 students, Thailand's Ramkhamhaeng University has become a world leader in education for developing countries. It uses television and radio, and publishes textbooks to reach its students.

At what "may well be the world's largest university" according to regional education specialist Dr Muhammad Selim of the United Nations Education, Scientific and Cultural Organization (Unesco), 500,000 students are enrolled. Although they squint at televisions, cram giant lecture halls, sweat without air conditioning and lack the personal encouragement students get in smaller colleges, "they're getting education they might otherwise be denied", said Dr Selim.

Thirteen years ago the university was founded to provide cheap higher education to Thai students unable to get into more costly and competitive universities such as Chulalongkorn, the Harvard of Thailand. Ramkhamhaeng drew 37,000 to its first class in 1971 and has now become the world's largest open university. From August 13 to 17, an international conference on open higher education will be held in Bangkok and some of the lessons learned in Thailand will be communicated to educators from over 30 countries.

For the thousands of Thai girl students wearing traditional blue skirts and white blouses, and the Thai boys like Orlan seeking to rise from the working or lower middle class into the professional class, Ramkhamhaeng offers a chance that was denied their parents. (Thais are known by first names.)

"When you say you graduated from Lam (the Thai nickname for the university) and you go for a job," said Orlan, "the employer knows you helped yourself".

Through a system of 16 study centres around the country plus a chain of radio and television stations, lectures recorded at a small studio in Bangkok are available to hundreds of thousands of students enrolled in degree courses. Courses are based on textbooks, written by the 850 teachers and published at very low cost by the university.

In a remarkable effort to produce texts and reference material in the Thai language, Ramkhamhaeng is publishing about 100 new titles per month – over three million books in 1980 – so that those who are unable to afford the time and expense of learning English can receive higher education.

"We require that when lecturers open a new course, a textbook must be available in Thai," said Pat. If over 1,000 students sign up for a course given three times in a year, that adds up to a minimum order of 3,000 which justifies publishing a new general text, handbook of structured learning materials and supplementary books."

The sudden availability of a vast and wide literature in Thai language may be having a profound secondary effect on this highly literate Buddhist nation of 50 million which was never colonized and whose people do not readily learn mono-tonal, Western languages. Increasingly, one finds students familiar with Descartes and Newton who do all their reading in Thai. It's quite a change from former colonies such as Morocco, Malaysia and India where almost all higher educational materials are still available only in French or English – not the local language.

Because texts and final exams are emphasized, only about 50,000 of the half-million enrolled students actually show up on campus for classes says rector Sukhum Nualskul. He was elected to his job by students, lecturers and administrators (each has a third of the total vote), about 15 months ago after a stint as dean of the faculty of political science.

In a part of the world where students have brought down governments, led revolutions and often inspired right-wing backlashes, the 41-year-old leader of Ramkhamhaeng seems able to guide volatile student energy into constructive educational goals.

"Do not be afraid of the activists", he said. "If you have a clean hand face them. Mostly they went on strike over political issues or when they suspected there was administrative corruption at the university".

The elected student leader Wanlert Kittitagul, 23, who considers the rector "a pretty good guy" described the political goals of Ramkhamhaeng students today as "wanting to know what's going on in Sukhum's office – is there corruption?".

Wanglert also criticized the university because "every year a fan falls down from the ceiling and kills or maims a student or two.

"And sometimes the television screens are too high or too few so students must look straight up or cannot see the screen. Especially in accounting classes, where they are dictating on blackboards, it's hard to see the television".

Though computers grade many exams, because there are sometimes over 200,000 pages of test answers to grade following finals, a common complaint is that results are sometimes not in before it is time to register for the next course. Students with questions for the teacher must send them up in written form to get an answer during class time or they may contact the teacher during office hours. This may satisfy curious and outgoing students but many of them, afflicted with the shyness that is a Thai hallmark, end up unable to contact teachers and lacking any sense of personal contact or relationship.

The curriculum adopted for the school is basically patterned on the American liberal education – two years of wide study followed by two years of concentration in the major field – leading to a Bachelor of Arts or Science. The most popular subject is law, followed by business administration, political science, economics, education, humanities and science. A shortage of funds had made it impossible to teach important and needed subjects such as engineering, nursing, medicine and some sciences, said Dr Pat. The budget is 400 million baht per year.

Many students select political and social sciences because the courses are easier than hard science said Pat, but long range government plans for more science and medicine in the future.

A major problem looming on Thailand's horizon now that Ramkhamhaeng, and a second open university with 200,000 students, Sukhothai Thamathairat, are offering mass education, is whether graduates will find jobs.

In Egypt, for example, massive public education produced hundreds of thousands of trained young people who must work for a dollar a day as clerks in hotels or government offices doing jobs far beneath their capabilities and interests.

"The question of underutilization after graduation is not our problem," said Pat. "Our job is to produce a qualified population and it's the government's responsibility to provide the jobs."

Many find government jobs. But in neighbouring Malaysia discovered, absorbing an annual river of new graduates into the public sector has a limit and Malaysian graduates were told this year to go out and find jobs in private industry, on their own. Thailand, with a respectable adult literacy rate of 86 per cent (for a country where annual income is under $800 per person) is just beginning to feel the burden of an over-abundance of university graduates who cannot find jobs.

From 30 to 40 per cent of "Lan" graduates currently cannot find work.

Nevertheless the university remains bound by law to accept all qualified applicants and provide a shot at higher education for anyone willing to "unflinchingly" carry on the burden of independent study with minimum classroom guidance", according Banphot Virasai, writing in a regional institute of higher education publication.

"The idea springs first from the dream that higher learning should be made readily accessible to all those who hanker after it", he wrote. Although some criticize sinking valuable educational resources into the majority of Open University students who never complete their degrees, advocates claim that the determined students will succeed. And that all education – even for those who cannot graduate or find jobs in their field – adds to the quality of life for everyone in the nation.

"There's a mismatch between university graduates and employment in many developing countries," said Dr Selim of Unesco, "following the universalism of primary education. There is a philosophical question as to whether higher education is meant for job training or to fulfill the social demand for it. Anyhow, for those without jobs the future is not sealed. One day they may have them."

Thailand and other developing nations know that economic development in the Third World is raising the demand for education. They are trying to meet that demand. Ramkhamhaeng is in the vanguard of that process.

Watching the world wear away . . .

An erosion gully in Swaziland, caused by a combination of poor cultivation techniques and overgrazing in an area of intense rainfall and bad soil structure

Andrew Goudie considers the origins and more recent development of the science of geomorphology

The origins of the word geomorphology are somewhat obscure, but it was probably coined just under a century ago by those two able and original stalwarts of the United States Geological Survey: Major J. W. Powell, the one-armed conqueror of the Colarado River; and W. J. McGee, the self-educated Iowan blacksmith.

They defined the subject as being essentially historical, with its aim being to elucidate the history of the earth by reference to its erosional landforms, rather than by the stratigraphic methods of the "old geology" which were based on an analysis of sequences of deposits. Under the influence of another great American science, W. M. Davis, geomorphology remained largely historical and evolutionary in approach, especially in the English-speaking world. Thus in Britain, until about two or three decades ago, the dominant view of the discipline was probably that held by the London geographer Sidney Woodridge, who sought, through an approach called "denudation chronology" to reconstruct a history of areas like the Weald by reference to the pattern of river networks and existence of small erosional remnants in the landscape. Such work was fascinating as an intellectual exercise, it gave its exponents the undoubted skill of "an eye for country", but it tended to have little obvious practical application.

Since the early 1960s geomorphology, which in Britain is largely pursued within the compass of geography, has steadily changed its character. Instead of just asking "How old?", and "In what sequence", other questions have become more central – "How fast?" "By what process?" and so on. Geomorphologists began to measure rather than describe forms, to monitor processes and investigate materials, thereby acquiring a whole variety of technical, numerical and analytical skills to supplement their traditional cartographic expertise and their eye for country. Geomorphology at this stage in its development was "applicable", but with some notable exceptions it had yet to become widely "applied".

Subsequent to this, pressures began to grow for geomorphologists to turn their thoughts to using their skills to solve practical problems: society demanded relevance, research councils responded by stressing that research should have some tangible benefits for society, the shortage of employment opportunities for graduates in academic life stimulated a search for new career outlets, environmental issues proliferated, and financial inducements arose in areas like the Middle East to lure bibulous academics to face the dry wastes of Arabia. For reasons such as these applied geomorphology became increasingly important. Geomorphologists began to concern themselves with resources and hazards. In Britain the work of David Jones, Denys Brunsden and Ronald Cooke (University of London) and John Doornkamp (University of Nottingham) has been especially influential and notable.

The work of the applied geomorphologist can be subdivided into a series of major categories. The simplest task involves using one of the basic skills of the geographer – mapping. Employing air photographs, radar and satellite imagery, combined with ground checking, landforms can be identified and then mapped. This is important since certain depositional landforms, such as alluvial fans or river terraces, can be sources of aggregate for the construction industry. For example, such materials are in great demand in the Middle East, and the contribution of geomorphology was recognized when a large team of British geomorphologists was invited to contribute to the Bahrain surface materials resource survey of the 1970s.

The mapping of landforms can also reveal the existence of hazards – landslide scars, for example, may indicate incipient slope instability, while polygonal soil and vegetation patterns in high latitudes may indicate the presence of pontially unstable subsurface permafrost. As new areas in unfamiliar environments, such as deserts, tundra and rain forest, become exploited, so this basic information becomes crucial. The mapping of landforms has one further virtue – some phenomena closely associated with them, such as soils, may be more easily mapped by mapping landforms, for it is landform patterns that show up so clearly from the air. Geomorphologists like Tony Young of East Anglia have been intimately concerned with developments in land evaluation and soil resource mapping based on a landform approach.

In addition to mapping landforms themselves, it may be necessary to make maps of other phenomena to help in the understanding of landforms. A map of rainfall intensity, for instance, may help in the identification of areas of soil erosion risk.

The second main category of work in applied geomorphology is concerned with process, change and hazard in the landscape. Basic questions arise as to where change is taking place, how fast and why. Maps, historical information and instrumentation help to answer these questions, and provide the basic data required to judge what one can do to change the pace of a particular process and to ponder what ramifications any intervention in the shape of, for example, an engineering solution, may have.

There are indeed many geomorphological hazards that affect man, besides the obvious and spectacular ones associated with earthquakes and vulcanism. In high latitude and high altitude locations people and property are threatened by advancing glaciers, capricious outwash streams, floods generated by glacier-dammed valleys, frost heave, melting or growing permafrost, avalanches of snow and ice, rock falls and the like. In a temperate area like Britain, the hazards may be less extreme, though the eroding coastline of eastern England, the sinking Thames estuary, the Aberfan tragedy, the closing of the Manchester-Sheffield road at Mam Tor, the flooding of Lynton and Lynmouth, and the blowing soils of the Fens and Breckland bear witness to the power of geomorphological processes. In desert areas problems are legion: blowing dust and sand, viscous mudflows, gully encroachment, the destruction of materials by salt, flash floods and ground subsidence caused by water and hydrocarbon removal. In the tropical rainforest cyclone-generated floods and enormous debris flows result from high rainfalls operating on deeply rotted bedrock, and if the protective layer of the rain forest canopy is removed (as is happening over between six and 11 million hectares each year), then rates of erosion can be colossal.

Moreover, although such geomorphological hazards may affect man, it is equally true that man, with his increasing levels of both population and technology, is himself a cause of some major hazards. To take an example, the construction of a dam to control a river can have many side effects: it traps the river's silt load so that the river bed downstream of the dam may begin to erode, undermining engineering structures; because less sediment reaches the sea, the coastline may begin to retreat; ecologically important coastline wetlands may no longer be replenished with silt and nutrients, and may gradually decay; the mass of water behind the dam may generate seismic disturbances or cause slopes to be unstable; while increases in groundwater levels as a consequence of seepage from irrigation canals can cause increased salinity, which in turn may damage buildings. The tragic decay of the Harappan city of Mohenjo-Daro in Pakistan results from this cause. One of the roles of the applied geomorphologist is therefore to be aware of the context in which engineering structures are located, so that their adverse effects, which may be considerably removed in both time and space, can be appreciated.

Having outlined some of the general aspects of applied geomorphology, we can now consider some specific case studies of work undertaken in this field by British scientists.

One process that has attracted great attention in recent years from workers in Belfast, Oxford, Sussex and London, is the rapid weathering and disintegration of rocks and building materials by salt. Salts of various types are widespread in coastal, urban, polar and desert areas. When salt occurs in rocks and concrete it can cause decay as a result of crystal growth from evaporating solutions of groundwater, or as a result of the volume expansion associated with the hydration of salts like sodium sulphate and sodium carbonate. Experimental studies with climatic cabinets have enabled an assessment of which salts are especially destructive, which climatic conditions favour salt attack, and which materials are particular susceptible. Maps of potential salt hazard have been produced for urban areas in Bahrain, Suez and Dubai, based on field recording of damage, measurement of groundwater composition, and by recording water-table depth. Such maps are an adjunct to planning, enabling forecasts to be made of those locations where ground conditions may be especially "aggressive". There is also scope for ascertaining where the damaging salts come from, whether from atmospheric pollution, groundwater, seepage from irrigation schemes, or by being blown in by dust storms.

Another hazard of arid areas is the movement of sand and dust. This can cause severe visibility reduction, lead to dramatic soil erosion, and engulf settlements, communication lines, runways and oil pipelines. By mapping the extent of susceptible materials and analysing the local wind regime it is possible to indicate those areas which, if disturbed by injudicious constructional, recreational or agricultural activity, may become active. Likewise by examining dune size and shape, and studying the wind speed and direction in an area one can begin to predict the speed and direction of dune encroachment. The proposed Jebel Ali airport in Dubai is an example of a location where such work has been undertaken. Moreover, by undertaking work on the dynamics of sand transport, schemes can be attempted for sand dune stabilization. The utilization of such techniques for desert environmental management has recently been reviewed in a book prepared by Ron Cooke and colleagues for the United Nations University (*Geomorphological Problems of Urban Drylands*, Oxford).

The Royal Geographical Society's International Karakoram Project (IKP) of 1980 provided an opportunity for geomorphologists to investigate the problems of road construction in high mountains. The strategically important Karakorum highway traverses difficult terrain to link China and Pakistan. The engineers had to cope with a series of major geomorphological problems: glaciers like the Hasanbad are known to advance rapidly and unexpectedly down their steep valleys – advances of a few kilometres in just a few months have been observed; the large outwash streams that issue from their snouts are prone to change position from season to season so that bridges are abandoned and roads breached; the river Hunza and its tributaries are subject to exceptional floods; and the steep slopes are liable to catastrophic failure. It was apparent that the Chinese and Pakistani engineers of the Frontier Works Organization had in general selected a judicious line for the highway, using those geomorphological facets of the area that posed fewest hazards. Nevertheless, post-constructional assessment by the IKP geomorphologists indicated that some geomporphological processes had been largely ignored. In particular the small culverts and bridges under the road appeared to have been designed without full recognition of the presence of viscous debris flows and associated large boulders, that are such a feature of the area. The lessons gained from this experience will assist in the design of future routes in similar environments.

Although much of what has been said so far has stressed the importance of studying the operation of present-day landforming processes, geomorphologists have not forsaken the study of longer time scales. Many of them are deeply interested in the various environmental changes that have taken place in the last few million years. This long-time perspective may also have applied potential. Two examples will suffice.

The first involves a major environmental concern – what will happen if world climate warms up a few degrees in the next century as a result of the "greenhouse effect" created by anthropogenic CO_2 emissions? Or, possible way to predict how sea-level might change, glaciers retreat, lakes develop, or sand deserts behave, is to establish what the world was like when the earth last had temperatures of the sort we are expecting in the near future. Evidence has accumulated over the decades that such conditions may have existed around six to eight millennia ago, and considerable effort is now being expended on establishing the global pattern and degree of change at that time. One technique that is being used by the Office Tropical Palaeoenvironments Research Group, led by Alayne Perros is to take cores from lake basins, and equally important work is being undertaken by Frank Oldfield and colleagues at the University of Liverpool. The material which is recovered from these cores can be dated by radiocarbon and its chemical and biological components analysed to establish the nature of past environments. By comparing results from many different lake basins on a global basis, predictions can be made about which locations may suffer severe drought if temperatures do indeed rise.

The second example concerns the recognition of fossil coasts. At the end of the Pleistocene Ice Age, around 11,000 years ago, the world's ocean were flooded by melting ice, and sea-level rose by more than 100 metres. The horizontal progress of the rising sea across the low-gradient continental shelves probably swept huge volumes of sediment before it. Tidal combing and bulldozing action deposited large amounts of material on present shores, creating such ensembles ordinary shingle features as Chesil Beach in Dorset. However, studies by geomorphologists like Michael Tooley of Durham, Alan Carr of the Institute of Oceanographic Sciences, and Clarence Kidson of Aberystwyth, have demonstrated that the bulldozing action largely stopped when the sea-level attained its present altitude some 6,000 years ago. Thus a feature like Chesil Beach may be a veritable fossil, receiving relatively modest amounts of shingle replenishment under present conditions. Large-scale abstraction of sand or shingle for the construction industry might lead to its destruction and crente flooding and erosion at Portland and Weymouth. Indeed Chesil Beach has recently suffered engineering works to protect and stabilize its crest, and thus a unique, classic and beautiful landform is steadily being modified by man because, in the view of some geomorphologists, the nature of the naturnl system has been misunderstood. Many coastal features are extremely fragile, and detailed assessments of their history and character by geomorphologists like Professor Bill Ritchie of Aberdeen, may help to reduce the potential threat posed by the development of offshore oil and gas resources.

Although this brief review has concentrated on some examples of applied geomorphology, most of these case studies have been based on a framework of fundamental research that has been undertaken over many decades. Pure research still provides most of the subject's vitality, and occupies the majority of the time of most of its practitioners. Innovation will come from this direction. However, applied work will undoubtedly contribute to theory, and it is as well to remember that two of the early fathers of geomorphological theory in America, G. K. Gilbert and R. E. Horton, were both employed in studies of a highly practical nature; Gilbert in the development of the American West, and Horton in understanding the Dust Bowl.

For its part geomorphology is currently in good heart, and productivity is high. The British Geomorphological Research Group – an affiliate of both the Institute of British Geographers and of the Geological Society of London – has seen its numbers grow from 263 in 1970 to more than 800 in 1984, and in 1985, at Manchester, it will host the first major international geomorphological conference. The theme will be "Geomorphology, resources, environment and the developing world". It seems that geomorphology and development is about to come of age.

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Cure for a social disease

R. A. B. Leaper on the recent review of social work training

The results of social workers' interventions in the lives of an increasing number of vulnerable and dependent people are potentially so far-reaching that we can be satisfied only with the best in their training and education.

The recent report of the working group of the Central Council for Education and Training in Social Work on the subject tried to come to terms with changing needs in the next decade. After its preliminary report was made public, the group completed a supplementary report. The newly reconstituted central council decided to discuss it further with the group before promoting a series of regional conferences on the future of social work training.

The lamentable failure to produce adequate national statistics about staff in various posts in the personal social services, and their qualifications, has bedevilled any serious attempt at manpower planning and training provisions in social services since these figures ceased to be published in 1976. (One cannot imagine such a serious lack in medical or nursing education).

Certain trends are clear, even with the old 1980 estimates given in the group report. The probation service is an almost entirely professionally qualified service; all that is required there is a replacement rate of about 5 per cent. In field social work there is also a high percentage of qualified workers (though of course unevenly distributed around the country). Before long the number of training courses validated for a Certificate of Qualification in Social Work will be in excess of requirements. Unless they attract new applicants for social work training in the neglected fields of day care and residential care, universities and polytechnics will soon face fulling demands; there is no immediate likelihood of a large expansion in the social services.

We have seen a steady decline in employers' secondment to training, and at present 25 per cent of those on CQSW courses are seconded, the majority by local authorities Grants from the central and local government support 58 per cent of those on courses, these being fairly evenly distributed between local authority grants for two-year non-graduate courses, and DHSS grants for one-year and two-year postgraduate courses. Home Office sponsorship has declined to 9 per cent of grant aided students on courses; and 7 per cent are supported by other means. The local authorities have put considerable resources into Certificate of Social Service training, and it is quite possible that with the tightening of the financial belt of local authorities, that process will continue and secondment may be further reduced. The role of the DHSS is therefore crucial for the future of social work training.

Universities are at least as much threatened by the possibility of reductions in outside financial support for their students, as they are by any reduction in university resources for postgraduate social work education.

Senates are not likely to discredit social work education because courses, with the same university or polytechnic internal awards as before, entrust a new national unified basic qualification. A graduate entry to the profession helps both the universities and the profession of social work. A degree in, for example, social administration, or, for example, in clinical psychology must be regarded as an integral part of training. There has been a regrettable tendency by some CCETSW staff and committees to refer grudgingly to exemption from the norm of two years' social work training. In reality an individual's education and experience is one continuum. Social work courses must enable trainees to concentrate on the parts of the knowledge base (as laid down in previous central council guidelines) in which they are lacking, and also on their personal development in the capacity to become a social worker. A minimum of one year's relevant experience after graduation should therefore be demanded of any social work trainee.

The current binary system of the CQSW and the Certificate in Social Service is no longer justified. What justification can there be for giving to field social workers and probation officers a higher general education and a more highly-regarded professional qualification than those who have the demanding and delicate task of the day-to-day care of the elderly, the mentally handicapped or children in need of care outside their family? We must be concerned to upgrade training, qualification and status of those who work in these sectors. There should also be greater transferability and flexibility of staff deployment in the social services, which our present dual system effectively prevents and which a unified system would facilitate. Within the system there needs to be two levels of qualification corresponding with the responsibilities held.

What must be remembered is that the central council does not itself award the qualifications of the university or polytechnic. At present the council recognizes certain awards given by approved courses as carrying with them the CQSW. This position would in no way be changed by implementing the proposal for a universal basic qualification in social work. What is more likely to have to change upwards is the level of educational entry to any course recognized for the basic qualification. If the possession of a university degree plus the qualification. If the possession of a university degree plus the qualification does in itself mark out its holder as a potential senior worker, this will have to be proved in practice to clients, employers and to fellow professionals.

At present the minimum educational requirement for those entering social work training anywhere is five O levels, though CCETSW guidelines refer to the need "to perform beyond A level standard". That level must not be lowered, as the status of social work depends to some extent upon its educational levels. We must not dodge this issue in order to avoid spurious charges of "elitism". Some people at present admitted to CSS courses might not be accepted into the new courses carrying the basic qualification. As with any other profession, they need a certain educational level – or a combination of education and relevant experience. Universities would continue to demand educational attainments consistent with further study at postgraduate level. However, a degree in some subject quite unrelated to social work would not give the holder any advantage. Such a graduate needs two years' education and training like any other entrant.

The graduate with a relevant degree should, after a year's experience, follow a year's course of training. Those without such education need to spend two years on it. Both require another year of supervised "cadet social worker" appointment before confirmation as a qualified social worker. The amount of time given to the advanced level will depend on the qualifications and experience of the applicant. The institution of a second level of qualification is bound to have repercussions on present post-qualification studies, and there is no reason to be ambiguous about this.

The group's recommendation concerning the involvement of employers seems to have caused a great deal of dismay in some universities. The independence of universities is certainly to be respected. The use of the word "endorsement" in the group report was intended to refer only to general agreement to the programme of education and training, not in any way to allow some veto to an outside body.

It is surely prudent to develop further patterns of cooperation with likely employers and with professional bodies – as is done in the scientific and legal professions – to ensure confidence in the training and qualifications. My own experience as a member of the central council leads me, with regret, to conclude that this has not always been the case. I would also like to see advisory groups connected with groups of training institutions acting as a new reference point for Central Council Social Work Education Advisers, whose role at present is most unsatisfactorily defined. The new advisory groups could help to monitor and improve the essential task of visitation and accreditation.

A crucial question is how much finance will be required for the new system, and exactly who is going to be willing to pay it. It is clear that unless things change dramatically, the resources from local authorities will be reduced. We must therefore get a commitment from the DHSS and DES jointly to support the system we are recommending. Without this, the scheme simply will not work. But then nor will most other schemes, including the present binary one.

In other European countries, the existence of a single nationally-recognized qualification without which a practitioner is not allowed to use the professional title of social worker gives strength and status to the profession. However, if the management and policy formulation functions in social services are to be part of the social work profession, it must involve some distinct and advanced training for them. Otherwise the model of leaving management to graduates in other disciplines will begin to gain ground. This is another reason for supporting the creation of a single and unified system of training with two levels within it.

When the group report advocating a unified training system with two levels of qualification first appeared, there was frantic opposition from social work educators in universities and polytechnics. There is evidence that they are now having second thoughts. This was certainly the case at the conference on social work at University College, Cardiff early in May where the spokesman for the Standing Conference of Certificate in Social Service courses expressed warm support for the policy advocated in the group report. The new CCETSW will have to make up its mind one way or the other within the next six months. Any new system of social work training will plainly take about five years to implement. In view of what we now know about forecasts of numbers seeking training that is a very short time.

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Harold Silver

A case of high anxiety and pre-stage nerves

Leaving my local radio station I wondered whether it had been worth it. An interview intended to be about teachers' pay and status had turned into a random chat about the DJ's worries over bits and pieces of the school system. And would I be willing to strike? Maybe it was worth it just to have education talked about that microscopic bit more. But I was more interested in my relief that it was over, in understanding the nervousness of waiting for my first live broadcast.

I had spent the morning, in fact, in an acute state of nerves, which had vanished with the first question. As do all my pre-lecture nerves vanish with the opening sentence. My lecture, like my broadcast, is no doubt a minor case of other people's pre-performance nerves. Similar perhaps to pre-flight anticipation, but interestingly different. Travelling by air, at a point early along the line you become someone else's property, are programmed, await disposal. On the air, unlike in the air, however, you sing or speak for your supper. While being programmed you wait to bear responsibility for being understood.

I remember clearly how nervous, if not petrified, I was for weeks before my professional inaugural lecture. The process, like the programme, was surrounded by the inevitable. And then you're alone. But why was I *so* nervous beforehand? Partly, I guess, because in the inaugural my professional pretensions were to be under public scrutiny – which can't be too unlike someone else's recital. I was at risk. The composition of the audience would be unpredictable, the level at which to pitch the message therefore impossible to decide – how do you satisfy family and friends, students and colleagues, visiting experts and the world – however small – at large?

Not that pre-performance nerves occur only with the unknown audience. I have also to remember how nervous I have always been before any kind of appearance. Before an open lecture in Atlanta, a staff seminar in Melbourne, a lecture to teachers in Coventry or a class in my own college. I have the same pre-stage nerves which disappear at the first syllable of communication. And in these cases I can predict the audience composition pretty well. And I have never given a fully impromptu lesson or lecture or speech in my life. If there are times when I skimp on preparation because time doesn't permit or I've done it before, I am still nervous enough not need to prepare. Knowing the audiences on occasion can make it worse. My worst case of pre-appearance nerves was probably to a small group of students, half of whom I knew, and of whom my wife was one.

Nervousness before communication is no doubt a function of the private made public. Some kinds of people, and some nations, develop the art more than others. Americans tend to be more public people, to engage more willingly in dialogue on their feet. I don't know how many of my British colleagues share my crises of anticipation, but I suspect a small proportion of my American ones do. British academics may have more to lose – in that, putting their knowledge and authority at risk in public they have more fragile personality chips to lose. And my own pre-appearance nervousness has to do with putting up for judgment not only mow own competence and self, but also the standing of the knowledge, the methodologies, the field, that I proclaim. I carry a set of anxieties about and beyond the personal.

So I find myself considering other preparatory nerves – other people's and my own. An immediate case – one agree to rewrite. We establish deadwith which I am certainly not alone – is that of pre-writing nerves. Every teacher faces banks of students fearful of the pen, and the typewriter (but, I am becoming more convinced, not enough of the word processor). As journalists manqués we delay to the deadline, not because we are lazy, or even busy, but because we are fearful of the commitment. Even the experienced are.

A former colleague and I, co-authors of a long-ago book still in orbit, are asked to prepare a new edition. We agree to rewrite. We establish deadlines, and delay. And delay again. There is a nervousness about the start, and my excuses to myself have to do with reluctance to meet up with a buried past, with other commitments, with the lack of a felt urgency. But with three chapters now revised or rewritten I know now that they were, in fact, excuses.

The main reason was timidity, fear of what would happen when the start was really declared, fear of not coping, of not being up to date, of presenting myself anew to an old audience, of putting myself again, differently, at risk. And my co-author, after deep and timorous breaths, also found herself confidently and surprised at work, having been through the same process of preparatory pain as the students she coaxes through the same kind of crises.

The other condition of nervous anticipation I see regularly, and from which, mercifully, I am (I hope) relensed, is that of being interviewed for jobs. I have vivid recollections of anterooms and offices where I have suffered – to some and to no purpose – the agony, not of performance, but of academic or administrative audition. "Do have a seat . . ." "Would you tell us . . .?" "Could we start by. . .?" The tension slackens, but in this the nervousness cannot completely go – being stared at, listened to, measured and judged in unfathumable ways, making impressions – watching for approval, disapproval, indifference. But now I do it to them . . . "Do have a seat . . ." Allow for nervousness, see how soon, how well, it is tamed. Or the lack of it, and the meaning.

The pre-performance is, of course, an ancient academic joke. We sharpen the legendary pencils a minority now use, make the coffee we don't really want, and do the unnecessary – or the necessary twice. As displacement activity before we write or prepare it goes on for an hour, a day, a lifetime. Often only the excuses, not the outcomes, become public property. How to commit oneself to the judgment, the definitive statement, the manuscript, when all around judgments are challenged and displaced, and definitive statements rapidly become the lumber of yesterday?

The history of academe therefore abounds with reputations not made, long processes never concluded, promise not fulfilled – not for lack of passion or competence or virtue, but from nervous anticipation of the start. And how abundant is the history of successful starts (which has nothing to do with the quality of the ends) and their accumulated agony? The process goes unrecorded. You don't judge today's product by yesterday's agony.

And on Friday I shall be lecturing on a topic I have spent two evenings and a railway journey unsuccessfully trying to get into a shape. And until 9 am with the second year students I shall have nervous about it. But I *did* agree to do it!

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BOOKS

Rescuing the rationalist heritage

by Ronald Beiner

The Theory of Communicative Action, volume one: Reason and the Rationalization of Society
by Jürgen Habermas
translated by Thomas McCarthy
Heinemann Educational,
£25.00
ISBN 0 435 82391 4

Philosophical-Political Profiles
by Jürgen Habermas
translated by Frederick G. Lawrence
Heinemann Educational,
£16.50
ISBN 0 435 82015 X

Imagine a social theory which sought to combine the boldest truths of German speculative philosophy with the analytical precision of contemporary Anglo-American philosophy.

Such a theory, let us suppose, would be equally at home in the traditions of American pragmatism, post-Wittgensteinian speech act theory, and German hermeneutics. Let us assume, moreover, that this theory would incorporate the best critical insights of Marx, Nietzsche, and Freud, while eliminating the elements of folly and extravagance in these teachings. It would take the best from both Marxist and Weberian social theory. Imagine, too, that the theory offered a comprehensive radical epistemology as a foundation for its theory of society, as well as a firm grounding in the latest research in philosophy of language, linguistics, cognitive developmental psychology, and other social sciences. Finally, let us presume that the enterprise was rounded off with an encyclopedic survey of alternative contemporary theories, showing either how each contributed to, or how it stood in the light of, the theory advanced to encompass them all. Such a theory, we might think, would go as far as humanly possible towards establishing a basis for social knowledge in our present circumstances (that is, telling us the truth about ourselves). This, without much exaggeration, is precisely the aspiration of the work of Jürgen Habermas as it has unfolded during the last two decades.

The magisterial scale on which Habermas presents his developed reflections in *The Theory of Communicative Action* matches this heroic conception of the task. Habermas seeks to define his position through dialogue with the "classics" of sociological thought, namely Emile Durkheim, Max Weber, G. H. Mead, and Talcott Parsons. In this first volume, his main interlocutor is Max Weber, with his characterization of modernity as an "iron cage", as well as Weber's legacy within western Marxism. For Weber, western rationalism is *both* a supreme achievement unique to Occidental culture, *and* an "iron cage" that encloses us more and more tightly in its grip. Marxists from Georg Lukács onwards have been forced to acknowledge the compelling force of Weber's analysis, transposed into the neo-Marxist category of reification. Theodor Adorno and Max Horkheimer bring this theoretical development to its conclusion of ultimate despair, leaving critical theory in an uncomfortable impasse. This is the situation to which Habermas responds.

The book has both a substantive thesis and a methodological thrust. As regards the substantive thesis, the basic underlying intuition, I think, is that people are locked into systems of administrative rationality without any effective say over the kinds of shared existence that ought properly to be matters of collective determination. The iron cage thus has a real political dimension: depoliticization of the public sphere, and an eclipse of any meaningful experience of citizenship.

As for the methodological message of the book, it can be summed up in a sentence or two: one cannot practice sociology without implication in the substantive contests over social truth; one participates in the truth claims of social actors; one is never suspended neutrally above the fray. This argument is undoubtedly correct. The two strands of the work, substantive and methodological, link up in the following way: social life is about the shared pursuit of truth. This orientation to practical truth guides our judgments about how society should be organized (to facilitate the collective detection of truth), and also guides our understanding of the relationship of the social-scientific investigator to the social actors whose perspectives he both shares and critically evaluates.

The contemporary context is relevant. Our situation, as Habermas understands it, is one in which anti-rationalism and relativism are rampant, as displayed both in the vestiges of liberal positivism and in the new appeal of Nietzschean post-structuralism. In an interview published in 1981, Habermas says that his theory of rationality is addressed to those "who cannot swallow such a prudish word as rationality without turning red". As he remarks, "the tragedy Lukács described as *The Destruction of Reason* now reappears as farce in our liberal cultural weeklies". The basic problem, as Habermas sees it, is that in the political conflicts that characterize contemporary society, say between those who exalt economic growth and those who abhor it, "both sides turn against the heritage of Western rationalism". His purpose, therefore, is to draw upon all available philosophical resources in order to rescue this rationalist heritage.

In his preface, Habermas describes how he struggled between seeking to pursue the analytical aims of the philosopher and remaining true to the interests of the sociologist, who must ask what purpose such conceptual analysis should serve. The implication is that the sociologist in Habermas kept him from becoming lost in the details of conceptual inquiry pursued for its own sake ("as *l'art pour l'art*"). Indeed, my own opinion is that the importance of the work owes more to its sociological motivation than to its conceptual achievement. (For all my sympathy for Habermas's project, I find it difficult to see how the classification of speech acts, for instance, can make any substantial contribution to the grounding of social theory.)

One of the problems is that Habermas despairs of philosophical inquiry as traditionally conceived. Philosophy, he says, can no longer furnish "totalizing knowledge". Instead, it should direct itself toward "formal conditions of rationality" in knowing, in linguistic understanding, and in acting. Current philosophy is post-metaphysical, limited to a theory of rationality. Habermas rejects both "substantive theories of nature, history, society" *and* transcendental philosophy in the Kantian tradition. "All attempts at discovering ultimate foundations . . have broken down". What is left is the project of a formal (but not transcendental) analysis of conditions of rationality.

Habermas is determined, at all costs, to uphold for his work the status of a strict scientific discipline, as opposed to "mere" hermeneutics. On the other hand, he has himself admitted that the truly formative insights are not won by science, but come through experience and habituation:

> In my convictions there is also a dogmatic centre. I would rather abandon scholarship than allow this centre to soften, for those are intuitions which I did not gain through science, that no person ever gains that way, but rather through the environment of people with whom one matures, with whom one discusses and in whom one recognizes oneself.

It should not be necessary to add that to admit this is *not* to relinquish claims to truth.

To gain some measure of appreciation of the distance which separates Habermas's concept of rationality from that which still prevails in much Anglo-American analytical thought, we may compare the concept of rationality taken for granted by John Rawls: "rationality is taking effective means to achieve one's ends". It should be clear that Habermas removes any presumption that individuals are the sole rational arbiters of their own ends. The question becomes: What is justifiable in the arena of collective discussion and decision? In other words, rationality is measured by the standard of *intersubjective* validity.

Jürgen Habermas, photographed by Tilmann Habermas

While the strengths of Habermas's position are visible in his divergence from Rawls, conversely, the weaknesses of his position can be seen in what he shares with Rawls. Habermas's grounding of morality, though it claims to be purely formal, to a certain extent already presumes to know the outcome of the (anticipated) ideal discourse. For instance, how are we supposed to know, in advance of actually conducting such a distortion-free discourse, that the emancipatory argument will prove to be the well-grounded one? Perhaps it is actually the emancipatory ideology *itself* which is a source of distortions. At least if Habermas embraced a substantial concept of moral rationality, he could have some warrant for claiming to foretell the anticipated outcome, in advance of actually conducting the requisite discourse in a domination-free society. This is the very same theoretical problem that plagues Rawls's contractualist construction.

I should add a note of caution concerning the difficulties of accessibility posed by the style of the text. Habermas is notorious for the density of his writing, yet I hope that this would not overly discourage readers. At times, making one's way through the prose is like struggling through a thicket. When Habermas says that "communicative actors take up yes/no positions on criticizable validity claims", he simply means that, as modernity takes hold, we increasingly make conscious, reflective judgments, as opposed to adhering unreflectively to traditional norms and customs. When Habermas refers to a "colonization of the lifeworld", he means merely that imperatives of administrative efficiency have displaced issues of moral and cultural identity. And so on. This problem of textual opacity is not helped by the host of Germanicisms like "action-theoretic", "thematizing", and "rationality problematic". For this reason, readers seeking a more gentle initiation into his thought might be well advised to turn to the lighter and more discursive essays collected in *Philosophical-Political Profiles*. These essays are to be highly recommended, especially the wonderful essay on "The German Idealism of the Jewish Philosophers".

However, in *The Theory of Communicative Action* there are also moments of surprising lucidity. For instance, Habermas's survey of his predecessors, from Weber through Lukács to Horkheimer and Adorno, in the final chapter of volume one, is clear, concise, and often brilliant. In fact, one should look to this chapter for the guiding centre of Habermas's work. In his survey we come to see that the authors apply different labels for what is really the same basic phenomenon: Weber calls it the "iron cage", Lukács calls it "reification", Adorno calls it the "administered world". Habermas himself refers to it as the process whereby subsystems of purposive-rational action encroach upon structures of intersubjectivity of the lifeworld. The volatility of contemporary public opinion (as can be observed, at the moment, in the course taken by the American primaries process) testifies to the acuteness of Habermas's diagnosis that political decisions are "decoupled" from concrete, identity-forming contexts of life within a political life choked by bureaucratic administrative systems.

I have little doubt that Habermas, in *The Theory of Communicative Action*, has written a major work, possibly one of the decisive works for the very urgent issues that beset our own times. Certainly, there was a critical need for someone to address anew, in a systematic way, the dilemmas that Weber had placed irrevocably on the agenda of modern theory, and it is most unlikely that anyone could be better qualified for this task than Habermas. Whether Habermas has finally achieved his purpose, I cannot venture to say. Clearly, the conception of communicative rationality is marked by important strengths, as well as by important weaknesses. One eager reviewer has gone so far as to declare that *The Theory of Communicative Action* "will play a role in the 1980s similar to the one that John Rawls's *Theory of Justice* played in the 1970s". Whether there are valid grounds for this expectation, again, I cannot pretend to judge; in any case, it is much too early to predict exactly how the work will be received in the Anglo-American world. But it will surely be fascinating to see what kind of reception is accorded to *The Theory of Communicative Action*. Among other things, it will give us important clues as to whether we are at last beginning to get beyond the individualism and moral scepticism that run so deep in our intellectual life and in our public culture generally.

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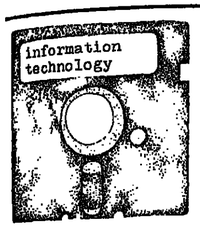

Machines that think for themselves

by Donald Michie

Articulacy in human experts is encountered only in those tasks where explicitness is of the essence. For such cases, suitable bodies of decision rules have been hand-crafted so as to conserve in computer memory, notably by Digital Equipment Corporation in the United States and by various users of the Prolog programming language in Hungary. A need for more radical automation of systems construction arises in the rather more common case that the skill is intuitive, in which case no explicit codification can be prepared directly. But if a computer program can be written that will analyse the inarticulate expert's actual decisions in a way that will extract a rule-based model of his skill, then automated synthesis of expert systems becomes a feasible branch of software manufacture.

A number of computer programs have already been developed that learn by generating rules from examples – that is, by induction. Experiments in several laboratories – the Machine Intelligence Research Unit at the University of Edinburgh, I. Bratko's Artificial Intelligence division of the Josef Stefan Institute in Ljubljana, Yugoslavia, R. S. Michalski's group at the University of Illinois at Urbana, and J. R. Quinlan's group at the New South Wales Institute for Science and Technology in Sydney – have led to the development of cost-effective methods of inducing human-type decision rules from examples. That these techniques can be generalized to the problems faced in automating more sophisticated skills is no longer in doubt; and, in Britain, commercial exploitation has been initiated.

We can now routinely synthesize machine-executable descriptions (in the form of Pascal, Fortran, Prolog or Cprograms) for classification tasks too complex for human experts either to perform, or to verbalize complete strategies for, or even reliably to perform. According to the style adopted, the machine-generated descriptions can be made to take either "Martian" or human form. In the second case, in spite of its synthetic origin, we call a machine-made description a "concept-expression". A recently developed programming technique has also added the capability that when a machine-made concept is "run" on a trial case, the system not only classifies the case but also displays an explanatory narrative in intelligible English as to how it arrived at such a classification – something that cannot always be done by the possessor of the equivalent human-made concept. This is a help both to the end-user and to the knowledge engineer himself.

One of the Edinburgh learning programs is the Analog Concept Learning System (ACLS), a commercially enhanced version of which is available for the IBM personal computer under the name Expert-Ease. A "training set" of examples of classifications within a chosen field is presented to ACLS as a list of records. All fields of the record except the last are entered with the values of those attributes considered by the user to be relevant to the classification task. These are known as "primitive attributes". The last field is entered with the name of the decision class to which the record is to be assigned (for example, circle, ellipse, triangle, square, polygon, other; or malignant, benign, imaginary; or allowed, disallowed, special-case; or, simply, true, false).

From these example records ACLS derives a classification rule in the form of a decision tree, branching according to values of the attributes situated at the nodes. ACLS also generates a Pascal conditional expression logically equivalent to the decision tree, and this Pascal code can be run to classify new test examples. Whenever a new example is found which refutes the current rule, ACLS can be asked to restructure the rule so as to accommodate the new case, and to display, store or output it as before. The set of attributes should be chosen by an expert in the given problem domain to be sufficient for classifying the data. In choosing the set of attributes the maxim is: if in doubt, put it in. Any attribute which is in reality redundant will be set to one side by ACLS and not included in the tree (nor the corresponding Pascal code) which it generates.

It is not necessary, however, that the expert should be armed with a clear mental picture of the rule which he himself uses when performing the given task. His role is simply to structure the problem into sub-problems, to supply the list of primitives and to act as an oracle by assigning example data to what he considers to be their correct classes. ACLS observes his behaviour as a classifier, and from this constructs the simplest rule it can, using the primitives supplied, which will assign the same example data to the same classes as he does. As the training set grows with the addition of fresh examples, so the ACLS-synthesized rule grows more sophisticated. As it does so, it may tend to approximate to a form on which the expert may comment: "That looks like the way that I think probably do it." The expert is thus enabled to transfer to the machine a judgmental rule which he already had in his head but had not explicitly formulated.

Inductive synthesis of a recognizer for the "last 3-ply" property in the chess ending king and knight *versus* king and rook (using the CDC Cyber 72 at the University of Sydney):

49 attributes
(mixture of 35 pattern based
4 low-level predicate
10 high-level
predicates)

715 distinct instances
177-node decision tree found in 34 seconds

Comparison of run-time performance of two hand-made and one machine-synthesized recognizer:

Classification method	*Running time (milliseconds)*
Minimax search	285.0
Specialized search	17.5
Using decision tree	3.4

Four closely related questions are now under investigation using ACLS and similar programs: (1) the possibility that a learning program, like the one described, can be used to extend the mental grasp of the human user; (2) the use of machine-synthesized programs as instructional texts; (3) the numerical measurement of the knowledge contained in machine-synthesized programs (see later); and (4) the development of human-intelligible concept description languages as mandatory vehicles for output from induction systems.

For a number of reasons, chess is specially qualified as a test domain for experiments of this kind. However, in order to confirm the generality of observed results, after basic work has been done in this measureable "test-tube" world, ACLS-type programs can be used to investigate knowledge enhancement in the domain of school algebra, robot vision, industrial engineering, fault diagnosis, chemistry, and so on.

Tests using an information theory approach to measure the knowledge-content of machine-produced (synthetic) programs are under way in Edinburgh and at the University of Illinois. Relevant theoretical work has also been carried out at Stanford University. Use is made of machine-oriented definitions, such as the "knowledge-content" of a program, "computational advantage", "penetration", "grasp" and rate of knowledge acquisition. "Difficulty" of a problem can also be expressed within the same numerical calculus.

The current objective is to build the measurement system to which I have already referred into rule-synthesis programs. Induction programs will then be enabled not only to produce rules which can be executed by machine but at the same time will be able to give the user a quantitative evaluation of each rule as it is synthesized – in terms both of its information content and of its anticipated suitability as a human-usable concept. For example, Alen Shapiro at Edinburgh has generated a set of synthetic rules which combine a reasonable approximation to machine optimality with brain feasibility. No general guarantee can be given that the two goals can be combined in any particular case. Moreover, from the point of view of brain feasibility, the problem of program transparency has been found to have some surprising twists.

Recent results have shown that programs constructed by systems such as Quinlan's ID3 (from which ACLS has been derived) can be, in one sense, "super-programs" and at the same time quite incomprehensible to people. By a super-program I mean one that is at least twice as efficient in terms of execution cost as the best which could be written by a programmer. The table shows the execution costs on a CDC Cyber 175 for three different programs written to solve the same difficult problem.

The first program implements a standard algorithmic approach. The second was the fastest pattern-coded solution which Quinlan, an outstanding programmer, could achieve after many months, about two of which were expended on finding an adequate set of primitive descriptors for the problem. The third was a machine-generated program, produced by ID3 itself, equipped with the file of primitive descriptors and a complete file of example data. ID3 running on the Cyber 72 generated this decision-tree program in 34 seconds. The ID3-synthesized program clearly qualifies as a super-program (see table). Further, and perhaps alarmingly, chess experts, however hard they try, cannot understand it: even though it constitutes a complete and correct description, it does not qualify as a concept description.

Work triggered by this observation showed that the reason lies in the way the decision tree generated by ID3 (or the corresponding Pascal expression) is structured. Shapiro and T. B. Niblett therefore developed a method known as "structured induction" – a hierarchical approach in the sense that the rules, or concept-expressions, generated by the program using the original primitive attributes, themselves become the primitives for the next pass through the data. Later work by Shapiro, which applied this approach to the chess ending king and pawn *versus* king and rook (pawn on a7), generated a complete and self-documenting classifier for a space of over 200,000 positions using some 350 expert-supplied examples. Since human experts are unfortunately *not* self-documenting, no codified classification theory of the domain previously existed, and so the classifier constitutes an original if miniscule contribution to end-game theory.

This method does, however, constrain the output of the inductive generator to take the form of decision structures which people can recognize as concepts. The constraints have been embodied in the syntax of a rule language CDL (Concept Description Language), for which a compiler is operational on the VAX-750. A new version, Human Subset Language (HSL), now under development, will enable the user to define "fuzzy" as well as strictly logical building blocks for his synthetic concept.

Expert systems have commercial promise. A system of over 2000 rules called R1, used at Digital Equipment Corporation for configuring computer systems to customers' needs, already out-performs their best technical salesmen. In knowledge refining, however, the focus is not on the product which the expert systems were originally designed to deliver – namely, interactive advice in conversation with a client – but on the unexpected by-product, the finished knowledge-base itself.

Expert system languages and induction systems can be used: to get knowledge into the machine; to test it; to debug it; to fill gaps; to extend it; and to modify it. Finally, the know-

continued on page II

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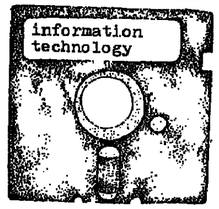

Imaginative use of videodiscs

by Diana Laurillard

The arrival of videodiscs as a new educational technology has created considerable excitement and enthusiasm among teachers. Despite high costs and the difficulty of working with new technology, there is a remarkable range of experimental projects already under way. So what is it all about?

Although videodisc technology is technically complex, the features which are essential for an educator to understand are straightforward. The disc itself is a storage medium which can store computer data, visuals and sound. It has 55,000 frames, each of which can store data equivalent to one video picture. A single one-sided disc therefore has the storage capacity for 30 minutes of film with sound, plus 10,000 slides. Because the disc provides random access to any location, it makes stored data more easily accessible than it would be on tape.

Videodisc players provide various forms of access to the stored data. Some domestic players are similar to primitive video cassette recorders, with the operations of stop, play, rewind, etc, but with no way of locating a particular part of the disc. These players, developed mainly for home entertainment use, provide high-quality picture and sound for films, or pop videos. They do not make use of the random-access capability of the discs.

The more useful players for educational purposes are those that have built-in microprocessors. In addition to providing all the usual operations (play, pause, stop, step forward, slow forward, scan forward, step reverse, etc), these also enable the user to access individual frames. The additional computer power means that it is possible to program a sequence of operational commands to the disc, so that a particular presentation can be automatically displayed, usually for demonstration purposes.

Some videodisc players, like some video cassette players, can be interfaced with a microcomputer. This means that all the operations of the player are under computer program control, and the player's keypad is disabled. The user can interact with the material on the disc via the computer program, using the computer's keyboard for input. The nature of the interaction, the sequence of material displayed, the degree of responsiveness to user input will all be determined by the computer program. With everything under computer control, the program may also decide whether the screen should display output from the videodisc or from the computer. The two may be combined if teletext is overlayed on videodisc output, so that it is possible to annotate, or provide captions or simple graphics under program control, rather than having this (perhaps changeable) information burned into the disc.

Taking all these features together – random-access storage, still and motion pictures, audio, full operational control of display, programmed control of display, computer overlay – this technology offers a tremendous range of educational applications to the imaginative teacher. Of the many projects attempting to harness the technology, the University of Nebraska has used archive film of the Tacoma Narrows Bridge disaster to introduce a detailed analysis of the physics of oscillations. Students can, for example, perform simulated experiments on model bridges by selecting parameters which determine which sections of film they see. The Open University has produced a videodisc on the structure of materials, which takes students through a detailed analysis of a real-life problem in metal failure. For example, they are given the opportunity to "drive" an experiment by using a step forward key to increase the load to a specimen in a tensile testing machine. The Geological Museum in London is producing a videodisc for use as a resource bank of visual information about the Earth's minerals. Users will be able to select the topic and the level of detail they require. The Massachusetts Institute of Technology has produced a videodisc in the form of a manual, where visual data can be accessed by graphic input to a visual display. For example, the user can request information on the repair of bicycle brakes by "pointing" to the appropriate part of the picture of a bicycle.

The key to the imaginative exploitation of videodiscs in education lies in identifying those curriculum topics requiring special treatment – mainly because students always have difficulty in grasping particular concepts or mastering the skills involved. The forms of interaction offered by videodiscs can help focus their attention or enable them to engage in thinking about or practising the subject in a unique way. The new technology can therefore provide an especially effective learning experience. And as with all educational technology (print and all other media), it is particularly useful where it is uneconomic to teach by traditional methods – for example, where student numbers are very small or very large; where students' learning requirements differ in level, pacing and timing; or where the student population is widely dispersed.

In terms of pedagogical advantages, increased efficiency and economics, then, there are good reasons for taking an interest in videodisc. But what about the disadvantages? In practice, we must consider three aspects: the resources needed for development, the logistics of implementation, and the students' experience of using videodiscs.

The resources necessary for producing an educationally valuable videodisc are considerable. The combination of media for communicating some curriculum topic requires that an interdisciplinary development team be formed with all the following skills: subject-matter expertise; video production; computer programming; graphic design; pedagogical design; evaluation; and educational management. Individuals may combine two or more of these skills, but the basic team is likely to consist of at least three people. The team will be responsible for the design, development, production, evaluation and implementation of the videodisc. Manpower resources are high – academic staff time alone has been estimated at 18 person weeks for the production of one new videodisc.

On the equipment side, the team will need further resources: the capability to produce high-quality video; an editing facility; access to sophisticated computer software for program development; and library film or stills. There will be further costs involved in making new video material. Costs of mastering the disc (around £2000 for 100 copies) are negligible in comparison with the real costs of production. For example, the cost of making the Open University's first educational videodisc, using in-house video and computing facilities and a high proportion of existing video material, has been estimated at about £30,000. Of course, it is always possible to start small, with a one-man show, linking an existing microcomputer to an existing video cassette player, as an experiment. But this only makes sense if there is a real possibility of expansion to full-scale production capability.

The logistics of implementing the videodisc will depend on several factors. If the disc is to be used as an individualized learning medium, then there should be enough work-stations for students to be able to use them in ones or twos, not more. If it is to be used as a resource for occasional consultation, then one work-station should be sufficient for larger student numbers.

Work-stations using videodiscs are still expensive enough, at over £1000 for the cheapest systems, that they will not be used as home-based or desk-top devices until the markets develop to make them much cheaper. In the meantime, they will continue to be used in resource centres, libraries and open learning centres – accessible to large numbers of students on an occasional basis.

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Interactive videodisc system. From Greg Kearsley's *Computer-Based Training: a guide to selection and implementation*, published by Addison-Wesley at £24.45.

Videodiscs place a heavy burden on students, requiring time, effort and initiative. Students must spend valuable time, beyond their normal routine, in getting to and from a study centre. If they use it only occasionally, they must every time re-learn the particular "bricolage" associated with using the centre and its equipment. There is usually far less academic and social pressure on a student to use study-centre material than there is to attend tutorials and lectures or complete assignments. A fair degree of commitment and enthusiasm are required, especially if the material is described as "optional".

Students' study patterns are not yet geared towards the use of resource centres. They may use a library, but their use of even this traditional resource can be extremely inefficient, except where they have been explicitly educated in how to use it. Resource centres and learning media must become part of the students' regular study before they can be regarded as less awesome, and used efficiently. But for this to happen on a reasonable scale, educational organizations must convert a substantial part of their on-line face-to-face teaching to the development of "batch-processed" learning materials and increase awareness of the importance of their resource centres.

Preliminary reactions to using interactive videodisc suggest that students, like it and would often like more of it – as it provides variety. They like the sense of active control that the medium offers, but they also need some advice, and constraints to work within – as the possibilities available with such a system can seem overwhelming. Designing the material to achieve the appropriate balance and to provide an effective learning environment is extremely difficult, especially with a very new medium. If the videodisc is to be educationally sound, it is crucial to build some form of developmental testing into the design process.

The question that all educators must address, as the need for education and training increases, is how far it makes sense to use technology as the solution. Technology must serve education, the educational needs being first carefully assessed. The videodisc is indeed an exciting and challenging new medium, but it will only be properly exploited when all the following conditions hold: (1) that the teaching, training or informing application requires the presentational and interactive complexity that interactive videodiscs can offer; (2) that there will be a large number of potential users so that sales of discs, or replacement of existing teaching methods can offset development costs; (3) that users will make regular use of a resource centre, or that the technology will be a natural part of an activity (as it would be in a film library, for example); (4) that sufficient work-stations can be provided to support users' expected use; (5) that a fully interdisciplinary team can be set up to design and develop the teaching material; and (6) that a formative evaluation, or developmental testing programme, can be included within the design stage.

Moreover, the widespread use of media such as interactive videodisc will depend on future development of teachers' professional skills, of learners' technological awareness, of technological simplification, and of greater organizational sophistication in education. As these changes occur, the exploitation of complex technology in education will become more feasible.

Diana Laurillard is a lecturer at the Institute of Educational Technology, Open University.

ARTIFICIAL INTELLIGENCE AND JAPAN'S COMPUTER CHALLENGE TO THE WORLD

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continued from page 1

ledge can be put back into the human world in unrecognizably improved shape. I. Bratko has shown that this phenomenon is generalizable across different knowledge domains using one and the same computer induction program.

In the differential diagnosis of lymphatic cancers, for example, Bratko successfully used an Edinburgh learning program derived from Quinlan's ID3, which was in turn based on Earl Hunt's Concept Learning System developed during the mid-1960s. In the Edinburgh program developed by Shapiro and Niblett in the early 1980s using the domain of chess, the strategies for the chess end-games were conveyed by examples (the resulting correct and complete theory of king and pawn against king being itself of interest to chess masters). Bratko then used the same program, in collaboration with clinical oncologists, to construct a diagnostic scheme for lymphatic cancers. In this experiment, with help only in extracting data from medical case-histories, Bratko, while knowing nothing about medicine, was able to perform as if he were a clinical expert.

What are the necessary ingredients for knowledge refining? First, knowledge-engineering software must be able to make inferences from data supplied, and to retrace and display the lines of reasoning. Second, induction modules must be able to generate rules from examples. Third, a good software development environment – for example Unix or Interlisp – is essential. Fourth there must be an adequate supply of trained knowledge engineers familiar with the necessary tools.

Finally, we need one or more experts. Even with inductive knowledge generation automated to the limit of current technique, an expert is still needed to choose the repertoire of primitive measurements or attributes to evaluate as relevant to the given problem domain, and to assist the knowledge engineer in the task of decomposing the domain into sub-problems, sub-sub-problems, and so on. This top-down analysis is the heart of the structured method of induction to which I have referred.

Originally designed to deliver interactive advice, it now appears that expert systems have a by-product which is in the long term more important – the finished knowledge-base itself. For example, using the logic programming language Prolog, I. Mozetic, Bratko and N. Lavrac collaborated in the early 1980s with senior clinical cardiologists of the Ljubljana University Medical School. By applying a generalization of what I have termed the "easy inverse" method, they achieved machine construction of a complete and ultra-reliable diagnostic scheme for multiple arrhythmias and their relation to the electrocardiogram wave form. The new knowledge, though small in extent, is sufficient to have a use in teaching and as a reference text for the specialist.

Most important of all, expert systems can be used to put the knowledge back into human hands in improved form, thus offering the distinct possibility of superseding the craft of writing manuals and texts on how to do things.

Professor Michie is Director of the Machine Intelligence Research Unit at the University of Edinburgh, and of the Turing Institute, an academic associate of the University of Strathclyde. This article is an edited version of the seventeenth annual ASLIB lecture, delivered on June 7th, 1984.

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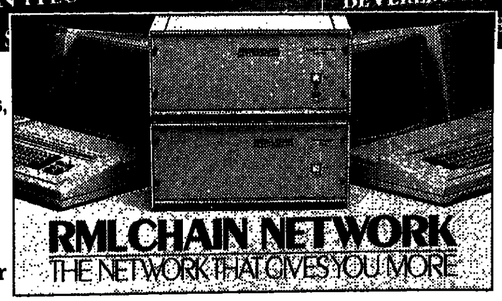

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THE TIMES HIGHER EDUCATION SUPPLEMENT 22.6.84

Remotely observed terrains

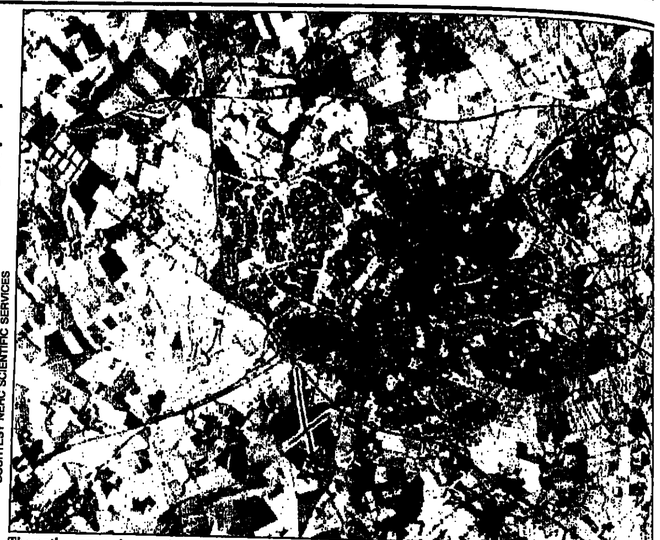
by S. A. Briggs and M. J. Jackson

Remote sensing is the study of the Earth from data collected by sensors carried on platforms such as ships, aircraft and satellites. The data may represent naturally emitted radiation or the reflected response from either the Sun or man-made sources such as radar, sonar and laser. Its potential applications lie in a variety of crucial areas such as mineral exploration, oceanography, environmental monitoring, weather forecasting, fisheries management, and so on. In simple terms it may be seen as an automated and repetitive method of data collection over large areas at a general level of resolution – regional, national or international – and as an invaluable complementary technique for supplementing and extending conventional forms of ground and ship-borne survey.

Interest in remote sensing has increased considerably during recent months for a number of reasons, all of which underlie its commercial and operational potential. In March 1984 the United States National Aeronautics and Space Administraton (NASA) launched the Landsat 5 satellite which carries a high-resolution imaging system known as the "thematic mapper" – a sensor capable of providing imagery of almost the whole of the surface of the Earth at intervals of sixteen days. The sensor records information at six descrete wavelengths in the range 0.45 to 2.35 microns for successive areas of 30 metres square on the ground, plus the emitted radiation in the thermal infrared (10.5 to 12.5 microns) waveband in every 120 metres square.

The Natural Environment Research Council Thematic Information Service and the University of Reading are collaborating with NASA in evaluating data collected using the thematic mapper. In addition to these data the first in a series of French Earth observation satellites (SPOT-1) due to be launched in 1985 will provide 10-metre resolution panchromatic and 20-metre resolution multi-spectral imagery (in two visible bands and one near infrared band) of the Earth's surface and will also be able to produce stereoscopic data for terrain mapping purposes. Britain is also expected to participate in the proposed launch by the European Space Agency of the ERS-1 ocean monitoring satellite in 1988.

These developments, coupled with an appreciation of the major commercial and scientific benefits of remote sensing, led the House of Lords Select Committee on Science and Technology to undertake a study of both remote sensing and the related discipline of digital mapping. The combination of data from these techniques provides the basis for a range of very powerful methods of computer analysis applied to environmental topics. The opportunities are considerable, but so are the technical problems encountered in meeting economically the requirement for computing facilities capable of processing the enormous quantity of data obtained from the various satellite sytems. A single scene from the thematic mapper, for example, covering an area of 185 by 185 kilometres, comprises about 300 million separate items of information (bytes); and for a study monitoring change or seasonal developments many such scenes may be required. Despite the size of the dataset, the analyst will want to access the data and be able to manipulate the displayed image before him, thus presenting a requirement for powerful image display and processing facilities.



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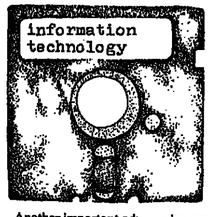
Thematic mapper image of the Swindon area (Landsat 4, altitude 715 kilometres). Running to the south of the town is the M4 motorway. Running through the town centre is the main British Rail Western Region line. Also visible is South Marston aerodrome.

For these and other reasons the use of computers is omnipresent in the field of remote sensing. They are necessary, in the first instance, for communication between the ground receiving stations and the satellites which gather the data, both in satellite control and in data reception. Subsequently, powerful computers at the receiving stations are used to process the data to correct for known instrumental effects. For example, in the case of the Landsat thematic mapper data, the area beneath the satellite is scanned by means of an oscillating mirror which deflects radiation from the Earth on to the multiple spectral detectors. The mirror oscillates perpendicularly to the orbital path of the satellite, the two motions (mirror and satellite) combining to cover a rectangular area on the ground. However, as the mirror does not move with a uniform speed and as the data are sampled at regular time intervals, positions on the ground corresponding to each sample are not equally spaced across the satellite ground track. The data then have to be re-sampled by computer, using known calibration data of the mirror oscillation rate, in order to represent contiguous physical areas in each data sample. This is one of the many corrections which have to be made to the data before quantitative analysis by an applied scientist.

The typical first operation which an analyst may want to apply to the remotely-sensed data would be to display it on the multiple spectral monitor and to enhance the image by radiometric transformation of the data. This could involve a simple contrast stretch, by which the data are redistributed over the maximum available range of grey levels for easier recognition of features in the image, or some more complex form of image enhancement. The analyst may then, for example, wish to perform a classification of the image, using data from several of the wavelength bands available; this classification could be into land cover types in the case of an ecologist or land use planner or into lithological types in the case of a geologist. Areas of the image, the ground cover for which is known to the scientist from ground measurements or other data sources, are selected to train the computer to recognize such data signatures as being characteristic of each particular class. The entire image is then classified by the computer into the categories defined by the training areas selected by the scientist. This work allows, for example, the identification of a particular land cover type (for example, deciduous woodland) over an area too large to be surveyed regularly by conventional ground mapping. By repeating this technique on data obtained from satellite passes at appropriate intervals, changes in land use in the temporal sense can be monitored.

Many other types of processing of the data may be required. Images can be geometrically transformed from their original format to register with specific cartographic projections, in the process enabling other sources of cartographic data to be integrated with the remotely-sensed data. (The development of intelligent knowledge-based or expert geographical information systems for the intelligent combination and management of data from such diverse sources is a very important area of current research.) Alternatively, operations for specific applications can be applied to the images. The computer can be used to search for boundaries or linear features (lineaments), the number and direction of which can be highly significant in the interpretation of the geology of a particular region. In the case of radar data obtained over the world's oceans, application of a two-dimensional Fourier transform to the images gives a rapid and accurate distillation of information on wave direction and length, of importance both to oceanographers and, in the context of weather patterns, to meteorologists. In short, remote sensing is now an invaluable source of environmental, meteorological, geological and oceanographic data for those interested in processes at the Earth's surface.

An important factor in the development and utility of remote sensing has clearly been the rapid increase in sophistication and decrease in cost of computer technology in recent years. As a result, analysis of large images, once only possible on very large mainframes and super-minicomputers to a point at which significant processing of such data is now possible on relatively cheap microcomputer systems. The development of image analysis systems around such microprocessors as the 16-bit Motorola 68000 chip is currently a very active field of interest of many computer manufacturers.



Another important advance in computer design in the field of image processing is in the development of specific hardware to perform certain operations on large datasets much more efficiently than standard configurations allow. Such hardware generally allows some degree of parallelism in the computational process; broadly speaking, parallelism involves the performance of more than one arithmetic operaton at a time. Array processors, parallel processors and pipeline processors fall into this category. Functions such as geometric registration of large scenes to cartographic projections can also be performed using dedicated hard-wired modules in a fraction of the time previously taken by conventional computing techniques. New methods of data storage such as optical disks (laser read, rather than magnetically read) will also be of great importance to the handling of the enormous data outputs of such satellites as Landsat 5 and SPOT-1.

The development of remote sensing from pure research to the applications stage has meant that as a subject it has had to emerge from its isolated view of the world to become part of a broad range of data sources. It is here that digital mapping, in particular, enters the scene. Digital mapping is the science not only of producing maps and atlases by computer-driven drafting equipment but also of the manipulation of cartographic data by computer. For example, ecologists studying the effects of a particular pollutant on the environment may want to calculate and display the results of different possible modelled scenarios. In such a study, relevant satellite pictures of land use and land cover may also provide valuable information.

However, although it supplies a vital contribution to the total dataset, digital cartography has developed with very different data structures from satellite data. Digital vector data are the points and lines defining the mapped items. A lake, for example, would be recorded by its perimeter, with codes linked to the perimeter points stating that the defined polygon contained a lake while outside that polygon were specific types of land use. The satellite data would represent the lake, however, by a pattern of square cells, information on the reflected radiation from each cell being taken individually, with no information on neighbouring cells or the total extent of the lake.

The way that computer scientists have overcome this incompatibility in data structures has been by the conversion of all non-image data to the cell format or raster structure. As with a television picture, the images are made up from many squares of colour, or pixels, this so-called "raster" format being for many purposes preferable to expressing linear information in terms of vectors. While the total data quantities are modest, and the level of analysis simple, this approach is acceptable. However, now that the integrated use of digital map and remotely-sensed data is becoming a matter of routine for increasingly large datasets, the inefficiency caused by the raster data format is becoming clear. Considerable research is now being undertaken into finding data structures suited to the input of both raster and vector data formats and which allow data compaction over areas of uniform information.

Hierarchical and pyramidal data structures are particularly suitable for such treatment and are also suitable for designs of data-bases which can be accessed with high levels of generality. Investigation into the design of such systems and into special arithmetics for efficient processing of data stored in this way is currently under way by a team from the NERC Thematic Information and Computing Services and the Open University. Approaches such as this will in future allow very efficient processing of the enormous quantities of remotely-sensed data that are now being made available.

Dr Jackson is head of the Natural Environment Research Council's Thematic Information Service, Swindon, and Dr Briggs is a member of its senior scientific staff.

Feel like you're marooned?

The micro world has several islands that are good to live on for a while. The 8-bit CP/M Island is well-established and comfortable, but plenty of people are now realising that the 16-bit islands called CP/M-86 and MS-DOS offer greater prospects. But moving from 8- to 16-bit can be hazardous — and which 16-bit destination do you choose?

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Shortfall in skilled manpower

by Alan Gordon and Richard Pearson

There is growing concern among producer, user and prospective user companies, that the widespread introduction and development of information technology (IT) is being hampered by a growing shortage of manpower with IT skills. These skills embrace electronics, computing, data processing, communications and control engineering, as well as the more esoteric areas such as artificial intelligence and intelligent knowledge-based systems. Indeed, there is increasing evidence that in the midst of very high levels of unemployment the increasing needs of companies for both hardware and software specialists remains unmet.

There is a chorus of complaints from major electronics companies: one apparently has outstanding vacancies for 700 IT specialists. There has been a substantial increase in advertisements for IT staff in both the specialist and generic media. Salary levels are increasing faster than other groups of professional staff – a salary of £15,000 per annum is possible four years after graduation. And the creation of an IT Skills Shortages Committee under the auspices of the Department of Trade and Industry is evidence of government concern. All this suggests that we have an IT skills supply problem that will clearly not disappear of its own accord. Employers are seeking both new graduates and experienced staff, with those possessing three to five years' experience being most in demand. There is also a growing need for the non-specialist to be aware of IT and its applications.

The reasons for the current problems are not difficult to identify. The demand by employers for staff skilled in IT has continued to increase throughout the recession. Existing users have found that year to year they have needed to recruit more IT staff. Indeed, the gap is growing as demand continues to increase, while supply at best remains static. Rates demanded by new users seeking to apply IT in their production methods, product design, data handling, and in delivery of services. Some of the more experienced IT professionals have been moving into non-technical management positions. And IT staff have also been required by non-British companies investing in Britain – particularly in the electronics and semiconductor industries. However, it is developments in the supply of IT staff during this time, when demands have been growing, that provides most cause for concern.

The higher education system represents the main source of supply of people with high-level IT skills in computing, communications, control and instrumentation, and microelectronics – one quarter of the 400,000 people employed in the British IT industries are graduates. And it is over the level of output of new graduates with relevant skills that most concern is being voiced. Despite a general commitment (without breath) that engineering and technology should be protected from cuts in public expenditure, institutional autonomy, reliance on voluntary wastage and the relatively high costs of providing IT-relevant degree courses have contributed to a diminution in supply. This has been further compounded by the general image of career opportunities in engineering among sixth-formers, who seem to consider electronic engineering in a light not dissimilar to other engineering disciplines, where job prospects are not so good.

The upshot of all this is that the numbers of students entering university to study electrical and electronic engineering and computing science in 1982 and 1983 actually fell (*Graduate Supply and Availability to 1984*, IMS Report No. 87 by Richard Pearson and Felicity Baker, 1984). The output of university graduates with first degrees in these highly relevant subject areas will thus fall in 1985, and fall further in 1986. And all this at a time when demand is growing (see figure).

Given the time lags in adjusting graduate output, it is not surprising to find many employers attempting to find ways around the problem of shortages themselves. One response has been for employers to expand greatly the number of electronics students sponsored on degree courses.

Initiative has been the expansion of one-year "conversion" courses for postgraduates. These aim to provide training in IT to those with first degrees in non-technical subjects. Altogether, there are now about 80 advanced courses in IT at universities and polytechnics up and down the country. In 1983, the output from these types of course amounted to a little over 200. In 1984, over 1000 students will be completing such courses, and entering the labour market from the end of June through to October. About half of these courses, mainly in computing, are accepting students with any first-degree subject, including the arts and social sciences; advanced courses in electronics, communications and control, on the other hand, are usually built on a related or partially relevant first degree, though not exclusively so.

In the first year of the IT Initiative, there was strong student interest in these postgraduate courses, with up to twenty applications per place being received. The experiences of the smaller number of students completing IT advanced courses in 1983 showed a strong demand from employers for those converted to electronics, computing and other IT skills. Those on specialist courses were even better placed for entering the labour market (*Manpower for Information Technology*, IMS Report No. 83, by Alan Gordon and Richard Pearson, 1984).

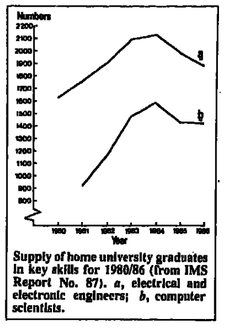
Interestingly, one of the short-term effects of all this expansion has been to reduce the number of IT professionals available to industry and commerce. Both the UGC and the National Advisory Body (NAB) have made funds available to departments to recruit extra staff to teach IT courses. In 1983/84 and for 1984/85, for example, the UGC are providing funds for 116½ IT posts in universities. Each post is funded through an addition of £21,000 per post to each university's recurrent grant. In 1983/84, a number of these IT posts have had to be re-advertised. At 10.9 applications per post on average, they also attracted a much lower-level of competition than any of the "new blood" appointments taking place at the same time, another indication of the state of the labour market for IT specialists, with departments often lamenting the UGC that the poor tion from industry. In the current round of appointments for IT teaching and research staff in higher education, it is likely that some IT posts will be even more difficult to fill than last year: the demands of industry and commerce are much more fierce.

At the graduate level the government response that has boosted the output from one-year courses is in the circumstances clearly a correct one. The conversion model is also one that might well be followed for other technologies if and when manpower shortages are expected. They allow a high degree of flexibility or fine tuning when linking higher education output to employment needs. Clearly, however, the skills that can be acquired in a one-year conversion course will not match those from a three-year or four-year degree course. And for many vacancies, it is these higher-level skills that are required. For the IT specialist with a single year's postgraduate training, more extensive in-company training will often be required.

Only a multi-dimensional response can overcome the IT skills problem for the 1980s and beyond. The supply of first-degree graduates in the basic disciplines relevant to IT must be increased. In parallel, the maintenance of conversion courses responding to shorter-term difficulties is a useful innovation. For employers, greater effort must be put into training and retraining in IT, either in-company, or using the higher education system, or specialist training organizations, at home and abroad. Action on all fronts and at all levels is essential if the existing difficulties in filling IT vacancies are not to grow even more severe.

On one thing, however, it seems that there is no disagreement: IT is not just a fashionable phase. The effective development and application of IT in all its guises is essential for the future health of the British economy. That development and application will require highly trained manpower, in sufficient numbers and of suitable calibre to make the most of the opportunities ahead. Over-supply should be the least of our worries.

Alan Gordon is a research fellow, and Richard Pearson is associate director, at the Institute of Manpower Studies, University of Sussex.



Supply of home university graduates in key skills for 1980/86 (from IMS Report No. 87). *a*, electrical and electronic engineers; *b*, computer scientists.

Sir Keith Joseph announced the government's IT Initiative in December 1982, outlining a three-year programme of expansion commencing in the academic year 1983/84. Its aim has been to strengthen the use of of IT in industry and commerce, and to encourage the application of IT in manufacturing methods, products, services, and data usage. In setting up the IT Initiative, however, no reference was made to existing or impending shortages of IT manpower. The IT initiative has involved a number of areas of expansion including: extra funding for non-advanced further education; additional places on first-degree, higher diploma and higher certificate courses; grants to the University Grants Committee (UGC) and the Science and Engineering Research Council (SERC) for additional teaching and research; extra IT research funding for the SERC; and the provision of funding for 1000 more postgraduate students in IT, mainly on taught one-year advanced courses at MSc and diploma level.

Although it is not clear what has happened in terms of extra first-degree places, a special feature of the IT

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Alvey and the academics

by Brian Oakley

Computer experts classify the various chronological developments of computers into generations: we are currently in the fourth generation. In the autumn of 1981 the Japanese invited experts and government officials from the west to a conference where they announced their plans for their "fifth generation" programme, intended to produce computers suitable for the next generation of computers.

This fifth generation is most likely to involve very large scale integrated circuits (VLSI) and parallel computers (in which many operations can be carried out in parallel rather than by way of the serial mode arithmetic units of today's computers). Perhaps the most significant development, however, will be the emphasis on computers that use inference to determine the solution to a problem (a rule base is used, the rules themselves often being of an empirical nature). Such inference computing is much like our own cognitive decision-making processes, where the input data is often imprecise and the rules complex and even contradictory.

Although the Japanese invited the western world to cooperate with them in their research programme, at the same time they left their visitors in no doubt that they intended to take a major share of the market for the next generation, hoping to increase their 15 per cent share of the world's information technology (IT) industries to 40 per cent. Moreover they intended to do so by the early 1990s – a challenge that led to a defensive response in many countries. In Britain a large meeting was held in January 1982 at which the findings of the British team attending the Japanese conference were presented to the British IT industry. That meeting led to a request to Kenneth Baker, Minister for Information Technology, to establish a committee to examine what the British response should be. Convened by the Department of Industry under the chairmanship of John Alvey of British Telecom, the committee reported in the summer of 1982; and after a period of consultation with industry the government announced its decision to establish in May 1983 what has become known as the Alvey programme.

As the Alvey committee had recognized the need to emulate the ability of the Japanese to create a national, coordinated drive, cooperating in work on the research stage but competing on the product development and marketing stage, it recommended a national cooperative programme in the enabling or underlying technologies of IT, the work to embrace all segments of the British research community who would contribute. As the enabling technologies were envisaged by the committee as those that are fundamental to the development of IT and that can be expected to influence the development of most aspects of the subject, the programme is primarily concerned with the fundamental aspects rather than with applications, except in so far as the applications help to "pull through" the basic work.

Although the Alvey committee only had one academic member, Professor Roger Needham of the University of Cambridge, the academic community has made a very considerable contribution to the evolution of Alvey policy, in particular through the work of the IT committees of the Science and Engineering Research Council (SERC). Indeed, it is unlikely that the Alvey committee would have been formed had it not been for the papers originating from an SERC workshop, proposing such an initiative to the rest of the IT community.

The main recommendations of the Alvey committee were supported by the government, who initiated a five-year cooperative programme costing £350m, £200m of which they contribute. The Department of Trade and Industry and the Ministry of Defence joined the SERC in sponsoring the programme. The Department of Education and Science, as part of its IT Initiative, provided the SERC with £50m extra through the Advisory Board of the Research Councils (ABRC) to enable it to participate in the programme. And although the SERC has not been able entirely to insulate the Alvey programme from the financial stringency affecting all its other activities, the SERC has backed its engineering board in seeing their contribution to the programme as a priority that must be protected as far as possible. Some £50m of the government £200m is intended for the academic part of the programme.

The Alvey Directorate that runs the programme has been established in industry and the three sponsoring bodies. It has 13 staff on secondment from industry and paid for by their firms. SERC provides one of the seven directors – Dr David Thomas, who also doubles as the director of the SERC IT programme, an arrangement designed to ensure that the interface between the activities of the Alvey and SERC IT directorates is as smooth as possible.

Because intelligent knowledge-based systems (IKBS) is likely to be the field in which the academic community makes the largest contribution – the subject has indeed only recently emerged from the artificial intelligence (AI) community, until recently restricted to only a few British universities – the SERC was asked to administer

The Alvey programme is organized into four main sections:

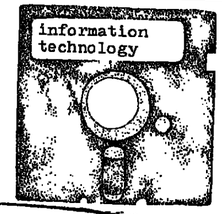
● *Very Large Scale Integration.* This involves the development of integrated circuits having a greater component packing density, faster circuit speeds, and better production yields than current products. This part of the programme is also concerned with the development of computer-aided design programmes, essential if such complex circuits are to be constructed. An example of a project in this field is a consortium involving the University of Cambridge, University College London, the University of Oxford, GEC and British Telecom in the study of mechanisms leading to failures in silicon-based integrated circuits.

● *Software Engineering.* As the production of software is still very much an art, this part of the programme is concerned with the development of the methods and tools that will turn the production of software from a craft into an engineering discipline, with all that this implies in improvements in quality, reliability, and productivity. For example, a team led by Systems Development Ltd involving GEC and ICL as well as the Universities of York and Newcastle is working on a set of tools to stimulate the production of software for real-time applications.

● *Intelligent Knowledge-Based Systems* (IKBS). This part of the programme tackles the problems of inference computing and parallel architectures. For example, the Universities of Edinburgh and East Anglia are working with Acorn Computers to develop a dictionary to assist in the automatic analysis of the English language.

● *Man-Machine Interface.* As it is widely recognized that some of the most intractable problems of computing lie in the development of methods of enabling the user to communicate naturally and easily with his machine, this part of the programme is concerned with developing easier methods – for example, speech recognition, which may facilitate communication. One important aspect of the work lies in studying the human mental processes that come into play when an individual attempts to "converse" with his computer – for example, the voice-operated database project being established by British Telecom and Logica with the Universities of Manchester and Cambridge.

● In addition, some research is carried out on computer networks. And as parallel computer architectures lie at the heart of the fifth generation, these appear in most parts of the programme. Dr Ronan Sleep, on secondment from the University of East Anglia, is responsible for putting together a national strategy for this part of the programme, with particular emphasis on what will be needed to make efficient machines to handle the declarative languages that are not only used in IKBS but also increasingly in other areas. Declarative languages, developed by the AI community and typified by Lisp and Prolog, are a new breed of languages based on logical concepts.)



that section of the programme dealing with this field. So although the academic community contributes to all parts of the programme and SERC staff help to administer all parts of the programme, it is in the IKBS part that it provides the main support for both the academic and industrial part of the programme. Academics are strongly represented on all the advisory committees, chairing the majority of these. Indeed, as they provide a neutral, informed and forward-looking group, in contrast to the industrial factions more used to competing than cooperating, large meetings when community meet together to study some specialized topic, are usually chaired by academics.

As might be expected, the academic community has played a large part in producing the strategy documents that have been produced for all parts of the programme. Indeed, the IKBS strategy originated in a working party, which was chaired by an expert from the MoD, Dr John Taylor, and jointly organized by the SERC and the DoI before the Alvey programme was set up. The software engineering strategy can be traced back to the work of the distributed computing committee of the SERC. And the work on the man-machine interface strategy has been strongly influenced not only by the "hard scientists" and engineers who traditionally seek their support from the SERC but also by the social scientists who normally turn to the MRC and the ESRC for support.

There is a long tradition of cooperation between British academics and industry – though not always British industry. For example, consider the part played by the University of Manchester in the early days of the computer industry through the close collaboration first with Ferranti and later ICT and ICL. A less well-known example is the work of Dr Donald Booth of Birkbeck College who first devised the core store and went on to run his own firm providing drums and core stores to the computer industry. Academics have a long history of effective cooperation with their computer suppliers, quite a number of the best-known names in the British academic world having served on the boards of major computing companies. It is doubtful, therefore, whether there has ever been any truth in the canard that British academics do not cooperate with British industry – at least in this field.

Computing is essentially an applied, or at least an applicable subject. It is appropriate, therefore, that there should be close cooperation between academics and industry – not least because of the way this helps to mould teaching syllabuses to the real needs of the students once they enter industry. Indeed, there is probably some truth in the often-expressed view that computer science courses do not always provide the broad background that industry is looking for in its new recruits. Also, some academics may have taken refuge in the assumption that industry is not interested in the long-term nature of their work, just as some industrialists have neglected their academic colleagues, assuming that academics are not interested in their problems. Similarly, there must be some truth in the view, first articulated by Christopher Strachey many years ago, that because the academic world cannot afford data-bases of the size or complexity facing the commerical world, it is reluctant to take an active interest in the practical problems facing the data processing community. However, whatever the truth of these suggestions of a gulf between the academic and industrial community before the Alvey committee made their recommendations – and there is absolutely no evidence for it in the best academic departments – the inevitable consequence of a national programme is to bring the parties together – for good or ill.

The main mechanism of the Alvey programme is cooperative grants, where firms work with other firms and with academic institutions to tackle specific research problems. Applications for support will not normally be accepted from the firms working alone. However, because it is recognized that some academic work will be of such a nature that it would be unreasonable to expect industry to commit resources, the Alvey Directorate has defined a type of grant specifically for the academic community. This is very similar to a normal SERC grant, except that the proposer is required to name an "uncle" in industry who will follow the academic work and report to the Directorate on its progress.

As no particular effort has been made to involve academics directly in industrial consortia, it is very encouraging to find that universities and polytechnics have indeed collaborated in the establishment and running of the great majority of these consortia. Of the 118 industrial projects so far received by the Directorate, all but 22 involve academics, and if those in the VLSI field are excluded, all but three involve academics. Even in the VLSI field, of the 15 projects so far approved nine involve universities or polytechnics. And taking part in the 30 approved consortia projects are 27 universities and one polytechnic. The number of bodies involved in each consortia varies, the maximum being eight with four being the average; a typical distribution would be two firms with two universities. The considerable number of universities involved in the programme as a whole, however, tends to disguise the much greater involvement of certain institutions.

Although about one-third of the Alvey programme is now approved, it is, of course, still early days. Early indications show clearly, however, that the academic community is going to be heavily involved, due in part to the atmosphere of cooperation that has been engendered by the programme. Academics do not feel inhibited in approaching potential industrial collaborators and conversely industrial research teams are recognizing the value of having academics involved in their consortia.

Even before the start of the Alvey programme, there was evidence that industry was again becoming more interested in the value of academic collaboration, after a period during which the advantages of self-sufficiency for in-house teams had been emphasized. And now that the pace of industrial growth in IT is accelerating, industry is feeling the problems of fast growth and the inability to recruit the skilled manpower they require, so they are increasingly looking to the academic world for help. Judging by the pre-eminent position in their subject held by the best of our academics, not only in Britain but throughout the world, industry has much to gain from such cooperation.

It is not only in Britain, however, that the Japanese challenge has led to growth of cooperative research programmes. This is particularly true of the United States, where the Japanese threat is most acutely felt, leading to the formation of large cooperatives. Of particular interest is the Semiconductor Research Corporation, in which 23 of the major IT firms in the United States have banded together to fund research in the integrated circuit field in their universities. And the latest US Department of Defense Advanced Research Programme (DARPA), with its fifth-generation objectives, specifically encourages projects involving cooperation of universities with industry, and the exploitation of academic work by industry. The European Strategic Programme for Research in IT (ESPRIT) has been established on very similar lines to the Alvey programme, covering much the same fields but with two additional applied areas – computer-assisted manufacture and office automation. Under the Alvey programme, academic institutions receive support for the same functions as they would on a normal research council grant. This assumes, perhaps no longer on any very firm foundation, that the University Grants Committee will provide the main research posts and the "well-found" laboratory (that is, one that contains the basic supplies and equipment that one would expect to find in a good research laboratory); the research council funding is intended to top this up by providing specialist equipment, research assistants, and so on. Under ESPRIT, cooperation between teams in different countries is a condition of support. Although the involvement of academic institutions with industrial research centres is encouraged, because the dual-support system does not operate elsewhere in Europe, only 50 per cent of the costs of an academic institution can normally be provided. This is, however, not so great a penalty to Britain's academic institutions as may at first sight appear, because universities' overheads may be included in the costs. Although conditions may vary from case to case, it would seem that British academic institutions an obtain much the same financial support under the ESPRIT conditions as they can under the Alvey conditions. The applications for the first full year of the ESPRIT programme are now in, but it will not be known until midsummer how well British academic institutions have fared.

Perhaps the most serious problem facing the academic IT community, like other parts of Britain's IT community, is the shortage of manpower to fill the key positions. The DES IT Initiative has included a total of 100 new IT posts in each of the past two years, partly to support the new IT MSc conversion courses, and partly to strengthen the research base. Although the research posts have gone very largely to key academic departments already well represented in the

continued on page vii

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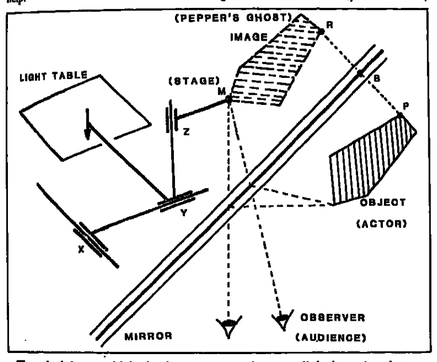
Sightlines to Pepper's ghost

by Peter Scott

Three-dimensional measurement is now becoming a matter of routine, thanks to a well-known theatre technique called "Pepper's ghost", modern electronic components and the processing power of the ubiquitous microcomputer. Projects centred on the spinal cord of an ape, fossil footprints from Laetoli, a Milwaukee brace, and impressions of Henry VII, have all been assisted by a non-contacting method of measurement that is quick, accurate and requires very little learning time – attributes that make it possible for any scientist with two good eyes to make measurements with no need to resort to the "specialist" for help.



The principle on which the instruments are based is simple (see diagram). If an object is placed in front of a semi-reflecting mirror, its image is projected to a position in space as far behind the mirror as the object is in front. The line between an object point P and its reflection R is normal to the mirror, and the distance P to S is equal to the distance S to R (where S is in the mirror surface. However, as the mirror is only semi-silvered, the observer can also see a real object – for example, M behind the mirror – and M will appear to occupy the same space as R. Using this phenomenon, by putting a large semi-reflecting mirror in front of an audience, at 45 degrees to their line of sight, the audience could be allowed a view of the stage (through and behind the mirror). An actor in the wings, initially in darkness, would briefly be illuminated and the audience would see Pepper's ghost appear in centre stage, move through furniture and disappear again.

In the Reflex instruments developed at University College, the object M in the image space is a tiny green light spot carried on a three-dimensional orthogonal slide system. The mirror consists of a semi-reflecting surface between to identical sheets of glass – this overcomes the refraction error introduced by viewing the spot through the glass, the object and the spot being refracted equally by the double glass. The spot can be guided by the observer to a salient point on the image using stereoscopic depth perception to judge co-incidence – hence the need for two good eyes. Each of the three slides is digitized. The larger instrument uses rotary encoders running on racks, and the smaller uses diffraction grating scales which generate moiré fringes. The *x*, *y* and *z* coordinates of the spot's current position can thus be passed through a standard RS232 communication link to a microcomputer, where they may be processed into the dimensions which the observer has specified. In addition, an extension arm, shown in the diagram attached to the *x*,*y* movements, travels over a light-box. A pointer on the arm can be used to take *x*,*y* plan coordinates from two-dimensional records such as radiographs or maps. Conversely, a pencil can draw the *x*,*y* projection of the shape traced out on the three-dimensional object by the spot.

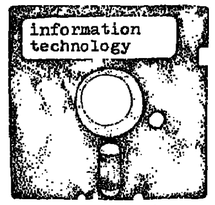
The first instrument, the Reflex metrograph, was developed in 1978 specifically for orthodontic research. Every dental school has many thousands of casts taken from patients' mouths before, during and after a course of treatment. Measurements are normally taken from these using a small steel rule or calipers, and a protractor. Results are not accurate. Many hybrid systems have evolved which produce commendable standards of measurement. Perhaps the best known is that of photogrammetry, whereby two photographs are taken from slightly differing viewpoints of the object to be measured. When placed in a suitable photogrammetric plotter, the photographs can be reoriented to their positions at the time of photography, thus creating a three-dimensional model that can be measured. The problem is that the system is so complicated that it does not encourage a researcher to use it; and unless it is done properly, the result may simply be wrong. By comparison, the Reflex instruments require no photography, no camera calibration to ascertain photographic distortion and none of the complex re-orientation procedures which a photogrammetrist must follow to create a true-to-scale image from stereo photographs. The object to be measured is simply placed on the instrument and observations can begin.

Many interesting avenues of research are being pursued. For example, children being treated for spinal curvature may wear a plaster jacket for four months and then a Milwaukee brace for eight months – appliances that exert upward pressure on the jaw, causing the teeth to splay outwards, resulting in changes of axial inclination of as much as 70 degrees. On removal of the brace, the teeth tilt back towards their original position, but stop short. Dr David Williams of University College Dental Hospital has used the metrograph to investigate the dentofacial features relating to the occurrence and extent of these changes: depth of palate, molar separation, distance of incisors from pre-molar line, and so on – all these were deduced from eight pointings made on each upper cast (the pointings taking less than 40 seconds for each cast). These three-dimensional measurements were then compared with two-dimensional measurements of radiographs taken on the metrographs's light-table. Traditionally, (two dimensional) radiographs have been used by orthodontists to infer three-dimensional information. By comparing the inferred information with the two-dimensional and three-dimensional results obtained directly using the metrograph, the validity of the assumptions underlying the traditional method could be checked.

A project to measure the vertebral canal through primate vertebrae was one of the next successes for the metrograph. The anthropologist's traditional tools, calipers, were unsuitable – the pointers filling the hole in some smaller species. Other methods tried were indirect – for example, requiring the processing of hundreds of photographs. Accurate measurement of the cross-sectional area of these inaccessible, irregularly-shaped holes was achieved directly and quickly by guiding the light-spot around the canal wall at the narrowest point and leaving the computer to integrate the result using the simple trapezium rule.

The metrograph has a measuring range of 300 millimetres in each dimension with a spread of 0.2 millimetre on repeated readings. Though accurate enough for the larger animals' vertebrae, some vertebrae were too small, so a second instrument based on the same principle, the Reflex microscope, was designed. The microscope has a measuring range of 110 millimetres in *x* and *y* (the coordinates in the horizontal plane) with spreads of 0.003 millimetre on repeated readings to a well-defined point, and 125 millimetres in *z* (or height) with spreads of 0.01 millimetre.

The important quality of the Reflex principle is that the object is not contacted in any way during the measurement, making the metrograph ideal for direct comparison of two precious and delicate images of Henry VII. One of the images, a terracotta bust in the Victoria and Albert Museum, shows the king as a man of about 45 years old. The second is a death-mask held by Westminster Abbey, made available by courtesy of the Dean and Chapter of Westminster. The bust may be a cast of the mask, suitably fleshed out. If so, as it shrinks during firing, the terracotta can be expected to be slightly smaller than the mask. Eighteen "landmarks" on the face were digitized on each likeness in turn, and a series of 15 linear dimensions and eight angles extracted from the coordinates. Three sets of readings were made on each (the observations taking less than one hour). The dimensions appeared strikingly similar, eight of them agreeing to within 2 millimetres – but there was no evidence of shrinkage on the terracotta. Although no firm conclusions have yet been drawn, the circumstantial evidence has been obtained accurately without resorting to the intrusive use of calipers.



Professor Michael Day of St Thomas's Hospital, London, has investigated the well-known prehistoric footprints from Laetoli in East Africa to ascertain whether they were made by a bipedal being. He compared a contour plot of the impression with that of a print made by a modern man in a sand pit. From this he could gain some idea of the distribution of weight and some indication of possible posture. Though initially carried out using standard photogrammetry, the work was later supplemented by a simplified camera. Later still, casts of similar prints from Neandertal were contoured on the metrograph, with greatly increased speed, accuracy and flexibility. Contours could be drawn at true scale using the metrograph's plotting table, by-passing the computer completely.

Since the cameras are fixed relative to each other, the re-orientation process is automatic. Two of the three disadvantages of the photogrammetric method have therefore been removed. Although the process is more time-consuming than the the standard Reflex method (because of the photography), at least the patient does not have to keep his leg immobile for twenty minutes at a time. Attainable accuracy also seems well within the repeatability error of skin-stretch resulting from different leg-positions. The simplified camera used in the Laetoli project was developed further here, so that the three-dimensional slide system of the metrograph could be used to take the measurements.

The extensive development of the Reflex microscope and the modernization of the Porro re-projection camera has been made possible by a grant from the Wolfson Foundation, a generous scheme that enables research ideas at academic institutions to be developed into commercial reality.

Peter Scott is until July a research associate with the department of photogrammetry and surveying at University College London. Commercial enquiries should be directed to Dr Scott's company Reflex Measurement Ltd, 9 Whitehall Park, London N19 3TS.

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Alvey programme, it is one thing to have posts, it is quite another to fill them with the quality of academics that those posts deserve. Some expatriates have been attracted from the United States, but the demand for good people is high there too and the financial rewards still much higher than the academic world can provide here. It is not easy, therefore, to persuade them to come back, despite the attractions of the intellectual life in this country. Similarly, the demand from industry for good research staff is creating a shortage in most parts of the IT field, and an absolute famine in certain others. This shortage is likely to set a limit on the rate of growth of both the Alvey and ESPRIT programmes.

This shortage comes at a time when the need for the universities to step up the output of students is manifest, both at undergraduate and postgraduate levels. Although this matter is now the subject of urgent discussions in Whitehall, it is clear that, even if the financial resources are made available, it will not be easy to find the staff in the short term to provide the increase in student numbers that industry so urgently needs if growth is to be maintained. One way to increase the efficiency of production of IT-trained personnel is through the use of distance learning techniques, such as tutored video instruction, as pioneered by the Open University. A scheme to put the production of such material on a firm footing is now being discussed with industry and those universities expert in the techniques, such as the Open University, Heriot-Watt and Aston.

The problem of obtaining agreement on the small print of the collaborative agreements both between the parties in a consortium and with the funding agencies is another factor looming large at the moment. To some extent this is inevitable, as there are so many parties in each consortium. Although it has been agreed that the property rights should rest with the industrial members of the consortia, academic institutions must learn to negotiate a reasonable return on their contribution, using the British Technology Group to assist them in these negotiations if they so choose.

Although it is too early to determine what the effects of the Alvey programme will be on the academic community, it is already clear that the potential for cooperation with industry has been much enhanced. There are those who fear that the academic community will be drawn into too much short-term work, but there are also those who fear that industry will be seduced to concentrate on work that is intellectually stimulating but of little commerical potential. With awareness of the risks, and open minds on both sides, such dangers can be avoided.

If the opportunity presented by the new climate of cooperation is seized to form a balanced and lasting cooperation between the academic and industrial worlds, much will have been achieved of benefit to the whole IT community in Britain.

Brian Oakley is Director of the Alvey Directorate, Department of Trade and Industry.

Looping the design loop

by J. B. Edwards

During the past twenty years, computers have been used intensively to support control research and have penetrated, rather more spasmodically, the practice of control-system design and control engineering. In design practice, the computer can ease enormously the burden of numerical calculation and graph-plotting inherent in most classical design methods – broadly, those based on techniques developed in World War II for automatic gun-aiming. So called "modern" control methods, however, which are more ambitious in attempting the unified control of very difficult multivariable processes (aerospace, multicomponent chemical plants, and so on), often in a cost-optimal manner, depend completely on the computer because of the complexity of the problems involved. Information flow, storage, reduction, retrieval, processing, presentation and interpretation lie at the heart of these and other off-line control activities, classical or modern.

The objective of these activities and the associated information technology (IT) is, of course, the working control system. Whether this takes the form of analog electronics, pneumatics or hydraulics, a single computer, a hierarchy of computers or some combination of these, it is in this system – the on-line control system – that the information handling problem takes on a special dimension and urgency not shared by off-line tasks, control orientated or otherwise. This stems from the obvious, but often-ignored, fact that the process to be controlled cannot wait for an arbitrary length of time for data processing and control calculations to be executed: delay implies instability.

The process runs continuously, so the automatic monitoring of its instruments and the calculation and actuation of its controls must similarly be more or less continuous, despite the complexity of the task. Real-time systems clearly cannot access future data, and their powers of anticipation, essential for stability, must therefore derive from, and implicitly incorporate much expert knowledge and analysis. In this sense, therefore, conventional IT applications pose but minor problems when compared to the real-time control environment. The off-line control activities are necessary to make feasible solution of the on-line task.

It follows also that, with the possible exception of slow-running upper (managerial) levels of hierarchical control systems, the newly identified disciplines of IT and information science can have little direct impact on the real-time control task itself – control theory and control engineering being well ahead in this respect. Indeed, the information disciplines as such have much to learn from control in this area. Where control can gain, and is gaining from IT, would seem to lie in integrating the disparate and multifarious computer-aided components on which control research and control design currently rely. This would ease the task of the individual researcher or engineer, allow a better sharing of their expertise (often maestros by temperament rather than organized players), to produce ultimately a coordinated expert computer system and thus aid the transfer of control technology to industry (not just enlightened industries), teaching, commerce, medicine and government, all of which are concerned with control in the broader sense.

As I have already claimed, control systems for all but the simplest of processes require a great deal of expertise in their design, if they are to perform accurately and rapidly to follow changing process demands and to compensate for outside disturbances. A control system put together by a non-expert will inevitably burst into oscillatory or exponential instability when its sensitivity is increased in an attempt to attain speed and accuracy. At best, therefore, naively-designed controllers are useless in that they either oscillate or are too slow and inaccurate to merit their expense. Such misbehaviour can at worst cause catastrophic plant failure; its other consequences, less dramatic but equally disastrous in the long term, include wasteful use of energy, manpower and materiel resources, impure products, and inadequate plant utilization.

The instability is not the fault of the process itself nor of the controller as such, but results from the fact that the two act together in a "closed loop" of information flow: the measured process outputs feeding back to the controller which drives the process inputs which in turn drive the process outputs. As all processes in nature are dynamic (they can be interpreted using differential or time-difference equations), they produce varying outputs that depend on the entire time-history of their inputs. To avoid instability, while retaining high sensitivity for speed and accuracy, a controller must have compensating dynamics built into it. Not a simple task.

All too often people do not know about or do not consider this fundamental problem: they do not realize that, in putting systems together, they are indeed closing loops or they deliberately ignore the problem through faith in divine providence, formal control-system design being regarded as too difficult or too expensive. There are, of course, cases where control systems fail despite intense design effort, because as yet the process for controlling is too difficult to analyse adequately: the national economy being a case in point.

The amount and level of expertise needed for successful control system design can vary enormously depending on the area of application. In run-of-the mill chemical process control, for instance, a wide variety of processes can be satisfactorily controlled nowadays by stringing together networks of proprietory instruments, actuators and controllers and tuning these during commissioning by well-established rules-of-thumb. These rules have been refined by experts and passed on to the technician level in courses at colleges of further education.

There are many areas – for example, in some branches of mining – in which similar rules-of-thumb would apply, but, with a few exceptions, the knowledge has been only sparsely acquired at any level of technical management. This is very often because projects requiring such control systems are of a one-off nature or again because the significance of the control problem is not recognized, expensive though the consequences may be.

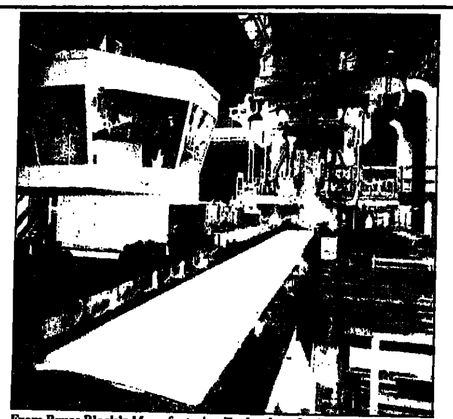
There are areas in which, although these particular rules-of-thumb are inapplicable, an expert control engineer, if employed or consulted, can use established design techniques to synthesize suitable systems. The methods involve a conceptual step from the time domain, in which all processes operate, to a sort of frequency domain in which the observed system is imagined to be excited by a spectrum of oscillations (from which all other signals may be synthesized). Although this conceptual leap unfortunately excludes the layman (including process engineers, management and computer specialists) from the problem, it renders life much easier for the control engineer as the difficult differential equations of the process can be transformed into much simpler algebraic equations. Exact stability prediction and estimating dynamic accuracy are now much easier. However, solving a given system is one thing; synthesizing a system is quite another, requiring not just the operation of a sausage-machine technique but creative insight supported by experience and expert design rules.

The graphical techniques – executable by hand, aided in the early days by the slide-rule and then the pocket calculator – help make subsequent design steps (the provision of compensating networks or extra feedback loops from additional measuring instruments) clear and obvious. The effort of mere calculation could, however, prove formidable if several excursions around this inner design loop were necessary in the presence of novel process dynamics. However, as the algebraic calculation of the frequency response loci and their rapid graphical display is ideally suited to computing, packages for the task have existed in universities to support teaching and research for over ten years and are being acquired or accessed by enlightened industries. Personal micro-versions are also proliferating.

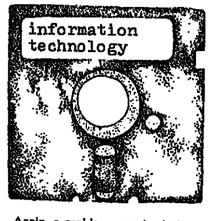
Computer versions, however, merely cut out the calculation and graph-drawing operations; their data-base formats are as yet not properly structured to exploit the transparency of design inherent in the manual versions. The fault lies in hitherto inadequate collaboration between programmers and experienced control engineers.

From this alien frequency domain it is necessary to transfer design results back to the familiar time-domain using simulation; (a) to guard against errors, (b) to check our estimates of accuracy and speed of response and (c) to convince other engineers (and perhaps management) of the potential value of our sophisticated controller. Prior misunderstandings and failures in human communication are often revealed at this stage: the process description or its objectives may not have been properly conveyed or assimilated and plant-design faults may be exposed, necessitating a second trip around this outer design loop. It is therefore necessary to move rapidly around these inner and outer design loops, involving frequent transfer between time and frequency domains.

In the early days, simulation would be carried out on an analog computer: still unrivalled in its ability to operate in real time, it feels like the real process in operation and allows continuous operator intervention. It is unable to simulate long delays (conveyor belts, pipelines, and so on) and is notoriously prone to random faults because of its multiple analog processors (integrators). Digital computation by contrast is repeatable but must be used carefully for time-domain work, where it attempts to approximate continuous differential equations by algebraic equations iterated many thousands of times through a single processor. For many process dynamics, however, the risks of purely numerical instability and inaccuracy can largely, but not completely, be overcome in a number of readily available simulation packages. What remains to be done is to render these capable of real-time operation and so improve on the accuracy and scope of the analog machine.



From Bruce Black's *Manufacturing Technology for Level-2 Technicians*, published by Edward Arnold at £4.95.



Again, a problem remains in iterating the outer design loop. The format of system representation for the frequency domain differs from that needed for time simulation. The former requires transfer-functions and the latter, state-space models. Conversion between the two formats by hand is straightforward using flow-charts, block-diagram algebra, and so on; being a lengthy exercise, however, it is error prone. It must be repeated with each structural modification to the control system under design and, although some packages allow a free flow of data between the two domains, they tend to lack the insight-generating, structure-modifying attributes of the multiple loop structure of the system equations is usually condensed then discarded at the input stage of the programs and is therefore not available for later examination and exploitation. We have therefore traded speed of calculation for intelligence (for the moment); but with closer collaboration with computer scientists the two attributes should not prove to be mutually exclusive. The problem to be tackled is clearly one of IT: not only "what information must be entered and displayed?", but also "what options must be stored and at what level for later access and modification?" Real-time and operator-intervention requirements clearly add a considerable dimension. Not only computer science but other disciplines can also contribute; chemical engineering, for instance, has long been concerned with interconnecting simulations (admittedly steady-state rather than dynamic) of numerous complex plant items in flow-sheeting programs.

Turning now to implementation, control systems using computers online have evolved by a variety of routes. In the case of, say, machine-tools only a few stages of development have produced the changeover from all-mechanical template-following systems to all-digital systems (digital measurements from encoders, actuation by stepping motors, and local control by microcomputer(s) all supervised from a higher level computer linked to the computer-aided drawing office: CADCAM systems. By contrast, in process control (of chemical, steam-raising, bulk-materials-handling processes), batteries of proprietary electronic analog controllers were first supervised by a remote monolithic central computer, this later taking over their second-by-second direct-digital control which could exploit multivariable control methods and still retain the local controllers for emergency and run-up operation. To overcome the consequent time-sharing difficulties of a single processor, the local controllers are now being revived; but this time in microprocessor implementations, thus producing a distributed multiprocessor system. Such systems are being applied in both traditional industries as well as in offshore and other ventures.

Although operators and managers will always be needed, their decision levels will move upwards with increasing levels of automation. The man-machine interface, previously a vast mimic and instrument display panel, is fast being replaced by colour-graphic visual display units incorporating much built-in local intelligence and thus enabling the operator to access any desired level of detail. Off-line, such terminals have made possible process trainers rivaling aircraft flight simulators for quality.

Although valuable work is being done by engineers and psychologists in the field of operator training, there is another gain from intelligent graphics: whereas scientific simulation, with its numbers and graphs, has allowed dialogue only between specialists, animated pictorial mimics linked into the simulation allows the participation of all concerned with the project, from process operator to managing director, before designs are frozen, to the enormous benefit of ultimate overall performance.

Despite the appearance of the word "control" in some technology syllabuses, control remains largely unappreciated in schools. Enquiries from potential undergraduates remain disappointingly few. Although at Sheffield viable three-year undergraduate courses in control have been run successfully for the past ten years and a course in control and IT starts in 1985, in general control engineering is only encountered as a final-year subject in classical engineering courses. Converts invariably express regret at not having known of the subject's existence earlier. Research offers a remedy, but much background material must first be mastered all too quickly.

Alternatively, there are several one-year MSc courses – for example, at Bradford, Cambridge, City, Imperial College, Sheffield, UMIST or UWIST – some of which also serve as conversion courses from other mathematical and scientific disciplines (pure, natural and applied): a scheme aided by the availability of Science and Engineering Research Council grants for conversion to IT subjects. These courses also cater for full-time or part-time industrial postgraduates, many industries having long appreciated the value of systems teaching. Unfortunately, one year on such a course may mean only two years' support for a PhD.

Although the advent of four-year courses should help midstream recruitment, it is to be hoped that schools will become increasingly aware of control engineering as a profession and control theory as a discipline. Indeed, it is in stimulating awareness of the importance, the fascination, the scope and employment potential of control studies, that the promotion of IT in schools may yet have its greatest impact.

J. B. Edwards is reader in control engineering at the University of Sheffield.

INFORMATION TECHNOLOGY

In March this year, The Times Higher Education Supplement also published a feature on Information Technology. It included articles on digital drawing-boards, geographical data shifting, computer tutors and current applications of desk-top terminals.

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BOOKS

Quesnay to Marx

The Classical Theory of Economic Growth
by Walter Eltis
Macmillan, £20.00 and £8.95
ISBN 0 333 15993 4 and 35969 0

That Walter Eltis should devote his first chapter to an examination of François Quesnay's *Tableau Economique* is a welcome development. Fifty years ago, the late Sir Alexander Gray, who would have considered himself in the tradition of classical economic thought, commented that Quesnay's work is "better reduced to an embarrassed footnote", yet the *Tableau Economique* should be the starting point for any study of the classical theory of economic growth.

The theory has been much neglected by modern economists, partly because the sheer overwhelming richness of the classical writers makes the extraction of their views on any one topic difficult and partly, and possibly even more so, because the methodology of present-day economics is so different from theirs. Eltis removes both excuses for neglect in the future. He isolates the classical growth theory and expresses it with the precision available only in the mathematical approach of modern economics. The mathematics is not advanced and is mostly segregated from the main exposition so that those who wish to avoid it – by choice or of necessity – may do so.

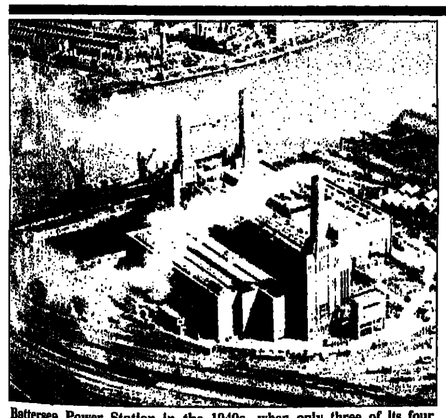
Eltis examines the key aspects of growth theory in Quesnay, Adam Smith, Malthus, Ricardo and Marx separately. Comparisons are frequent and readers will make more depending on their interests. He ends with a valuable, thought-provoking chapter which shows the unity of theme which binds together the diversity of emphasis. The unity is the simple central tenet that only certain economic activities generate the surplus which can encourage economic growth by appropriate use. The theoretical proposition has radical social consequences because the surplus was also seen as the source of high personal incomes and of government expenditure. Eltis shows that the distinctive features of the five writers do not detract from their practical unity. The surplus is the central proposition, whether it emerges from Quesnay's emphasis on agriculture, Smith's distinction between productive and unproductive labour, or Marx's emphasis on the production of physical commodities by underpaid labour.

In setting out to isolate the key elements in the classical theory of economic growth in the works of the five writers, Eltis set himself a difficult task. He discharges it successfully in his careful and lucid exposition. He had to extract contributions to one aspect of economic theory from a vast and complex literature which did not deal with it specifically and dealt with much else as well. Historians of economic thought will find new insights into works with which they have long thought themselves familiar, but Eltis's main message must be to economists, especially perhaps to the growing number in recent years who have come to regard the history of economic thought as a declining industry with little to say to them. Eltis shows that the classical theory can be expressed in the precise terms now used. Even more important, he draws attention to the need to consider the possible validity of the central proposition of the classical theory that only some activities are surplus producing and that their identification and the use of the surplus become the critical determinants of growth. In that case more than the *Tableau Economique* should no longer be relegated to embarrassed footnotes.

The reinterpretation still leaves a nagging worry. The application of the classical theory requires that its institutional assumptions hold or, as Eltis recognizes, be replaced by comparable modern substitutes, but the attempt to formulate it in precise analytical terms can lead to a neglect or underestimation – often unintentional – of the rich institutional and even psychological background in which the classical theory was formulated. More generally still, and again as Eltis recognizes, the influence of logically clear and developed arguments can be limited. Quesnay may have been the economists' economist because he was least able to advance his propositions in a language, and in an institutional context, which made his work seem a tract for the times. Smith and Marx may have been influential because they did the reverse. Eltis's exposition is a fascinating reformulation but must not be taken to replace the latter's wide-ranging interests and institutional concerns. Eltis himself would probably agree.

R. H. Campbell

R. H. Campbell is professor emeritus of economic history at the University of Stirling.



Battersea Power Station in the 1940s, when only three of its four chimneys were in place. The picture is from *The Art and Architecture of London* by Ann Saunders (Phaidon, £22.50).

Foreign lending

Foreign Finance in Continental Europe and the USA 1815–1870: quantities, origins, functions and distribution
by D. C. M. Platt
Allen & Unwin, £15.00
ISBN 004 3303366

Revisionism is a powerful force driving economic and social history. This book is wholly within that vein, providing the detailed evidence for Professor Platt's 1980 article in *Economic History Review* in which he maintained that British portfolio investment overseas in 1870 was probably £500 million rather than either £1 billion or £785 million estimated by earlier workers in this particular field. He comes to this conclusion from a detailed examination of international capital flows during the period from Waterloo to the international crisis of 1873, based largely upon the archives of Barings.

After a very short introduction relating his earlier conclusion, the supporting evidence is amassed in a series of chapters, each surveying a particular country. Greatest attention is given to France, Russia, Spain, and the United States. The least satisfactory is chapter four, which attempts in the same manner to lay out fresh conclusions for Austria, parts of the Balkans, Germany, and Scandinavia. The book is highly compressed and this is nowhere more evident than in the 18 pages of text which comprise this chapter. At times revisionism can lead to polemic and in places Platt approaches that borderline, almost giving marks to previous scholars who have made contributions to this area. The tone of the book is therefore strident and Professor Platt is certainly convinced of the validity of his own conclusions.

The great difficulty of trying to estimate the volume of capital exports lies in the lack of subscription records. Most foreign securities, whether they were issued in London, Paris, Amsterdam, or Berlin, were issued in a bearer form and therefore were anonymous as well as being highly mobile. Previous workers have used the financial press, tax returns or balance of payments calculations; here Platt claims that a more secure foundation is provided by the estimates of the loan contractors, and he uses them with great force and to the point.

His main concern is with what he calls the two great whirlpools of security issues in the mid-nineteenth century – government debt and the shares and debentures of railway companies. They were often floated in mania waves and as such initially sucked in nearly anyone who had either some savings or could obtain a margin loan from a bank. Time and time again Platt points out that historians must distinguish between speculation and long term investment because the froth on the eddy is no sure guide to the direction of the current of a capital flow. Often it appears foreign investment was either a catalyst or a speculative force taking advantage of price differences between European capital markets. However, once the surge of speculation subsided, once the initial impetus had been given to the mobilization of savings, then it was largely domestic bankers and domestic savers who provided the finance for either balancing the government's budget or building a nation's transport network. Accordingly, whereas three quarters of the first French indemnity loan of 1817 was taken by foreign loan contractors, in 1818 French bankers had parity in the contracts, and by the early 1820s *rentes* were nearly all in French hands – in family *portefeuilles*.

The approach of the book – switching from country to country and within each chapter from short introductions to considerations of issues of state and railway securities – does tend to obscure other important conclusions, rather than the main thrust of Platt's argument. The book demonstrates the great strength of the bankers of the "old wealth" and the importance of other capital markets such as Amsterdam and the north German cities. But Platt has not the space either to provide the reader with a view of the institutional framework of the period or introduce his main actors in any rounded form. There are a large number of asides about Joshua Bates of Barings and James Rothschild which ought to be brought together.

Despite his reduction of the scale of British overseas lending and his claim that the estimates of French foreign lending are probably also too high, Platt still points out that Britain was the principal supplier of foreign finance in the mid-nineteenth century. However, in a characteristically sphinx-like concluding paragraph, Professo. Platt feels that the marginal role played by capital imports in American and European industrialization is probably over-rated. As such he probably shares some of the philosophy of the bankers whose correspondence he has so assiduously read – that Europeans in the Old World and the New financially pulled themselves up by their own bootstraps.

P. L. Cottrell

P. L. Cottrell is senior lecturer in economic and social history at the University of Leicester.

ATHLONE

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BOOKS

The case for the defence

H. G. Wells: aspects of a life
by Anthony West
Hutchinson, £12.95
ISBN 0 09 134540 5

This year we are seeing the last acts of a literary drama which began in August 1914 with the birth of an illegitimate son to H. G. Wells and Rebecca West. Though Anthony West's parentage was openly avowed, the circumstances of his conception and upbringing could not be discussed in print until the late 1960s, when, as he tells us, his mother began to play a steadily increasing role as a source for Wells's biographers.

The leading Wells expert at that time was Professor Gordon N. Ray, who had negotiated the purchase of the Wells papers by the University of Illinois at Urbana. Ray was believed to be on the verge of producing a full-scale life and letters. In 1974, however, he published, not the monumental biography, but a titillating monograph on the Wells-West relationship dedicated "with profound gratitude" to Dame Rebecca. Wells did not emerge with great credit from this book, any more than he had done from the introduction to the Wells-James correspondence that Professor Ray had earlier written with Leon Edel.

The one reviewer who did not join in the general glee over *H. G. Wells and Rebecca West* was their son Anthony. Since he had played a major part in the story, why, he very reasonably asked, had the book been written without any reference to him? The answer, he implied, was that Dame Rebecca had forbidden Professor Ray to consult him, and Professor Ray had meekly done what he was told. Anthony West was angry and bitter over the alleged misrepresentations of his own and his father's life, and promised that one day he would put the record straight. In 1983 Rebecca West died, and since then the floodgates have opend, beginning with the English edition of Anthony's novel Heritage – an autobiographical fiction of which British readers had been deprived for the past thirty years. Still more remarkably, a third volume of Wells's *Experiment in Autobiography*, whose existence had been kept a closely-guarded secret, is to be published this autumn. And here in the meantime is Anthony West's long-awaited biography of Wells.

The first thing to say about it is that he loved and admired his father, and defends him enthusiastically against all comers. The Wells who stand most

H. G. Wells photographed by Karsh

in need of such defence is the tireless educator, prophet and journalist – not the author of the scientific romances, whose place in English literature now seems assured. Wells's decision to embark on his prophetic mission led him to cut loose from "literature", above all in his famous quarrel with James. His later writings are the product both of urgent insight into humanity's problems and of his appetite for power and self-reinforcement, which also played its part in his increasingly Byronic adventures with women. We see his ruthlessness at the start of this book, when the author describes, not his father's, but his own birth. Far from being on hand to comfort Rebecca, Wells was busy writing the newspaper articles that became *The War That Will End War*. Anthony, at least, does not venture to criticise this sense of priorities.

To vindicate the later Wells one must believe that his pamphleteering has left a significant legacy to the contemporary world. West's loyalty, as it happens, does not extend to the more revolutionary aspects of his father's commitments to socialism and science. He judges Wells's far-sighted-ness about things to come by his ability to anticipate the established things of today. I do not think that Wells himself, however, would be satisfied to be told that he had helped to create the climate of opinion which made the United Nations and the EEC possible. For all the undoubted love between them Anthony comes across as very much more of a conservative than his father.

At first sight *Aspects of a Life* is a rambling book; but its strategy is a forensic one. We begin with the author's powerful and (I should think) unanswerable demolition of his mother's credibility as a source for Wellsian biography. Later, Henry James, Beatrice Webb, Dorothy Richardson, Moura Budberg, and Leon Trotsky (who is accused of inventing Lenin's notorious dismissal of Wells as a Philistine petty-bourgeois) are among those given an uncomfortable time in the witness-box. In some enthralling chapters West cross-examines Wells's auto-biography, which is revealed as "half novel and half what its title claims to be". In particular we are given a mordant reconstruction of "H. G.'s deprived childhood and family background, convincing and well-researched, but altogether lacking in Wellsian geniality.

Time and again, the verdict on previous eye-witness accounts of Wells's life is that they are the work of "fabulists" – "people who deal with unacceptable truths, by modifying them again and again until they have been transformed into more negotiable material". The process is so close to fiction-making that it is no accident that several of those accused were, in fact, novelists. The rational thinker remains capable of clearing his mind of cant however proficient a fabulist he may sometimes be. This, more or less, is West's case for his father. He was too honest, and too intellectually resilient, to remain caught in traps of his own making which is why his career remained so open and his literary output so full of surprises.

It is absorbing to relive the career, to re-experience the prodigal energy and the surprises; but to do so in West's hands is to be subjected to growing doubts. The problem is that he too has inherited the process of fabulism. One notes how much of his argument is conducted by means of slanted paraphrase, rather than direct quotation even where the matter to be quoted is in the public domain – here is a very obvious form of rehandling. And West, too, is a novelist and critic who has substantially modified his earlier perceptions.

The gestation of this book, he is careful to tell us, began shortly after his father's death in 1946. Yet he is quite unnecessarily silent about a major change in his own views, which has taken place since the influential essay on Wells that he first published in 1957. In that essay he described Wells as a natural pessimist who had violated his deepest intuitions by trying to persuade his readers that they could make a better world by an effort of will. In his last years he had come to see his mistake, and he "knew in his bones that the aesthetes were right". According to West (1984 version) he did not know any such thing. "Dear old Henry J's self-serving guff", as our author puts it, was all wrong. In the new biography, Wells's life is shaped by a multitude of external conflicts; in the 1957 essay, however, it owed more to the "intensity of his internal struggle with his demon". Like one of his own famous house-parties, *H. G. Wells: aspects of a life* displays "H. G.", his friends, family, mistresses, and rivals in all their brilliant profusion; but somehow it misses out on his demon. Wells the writer is somewhere in the house, locked away (as was his habit) behind double doors; but he makes only brief and fleeting appearances. For the most part the talk, the fun, the games-playing, the intrigue and the heart-ache are so intense that we scarcely notice his absence.

Patrick Parrinder

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Spiritual dilemmas

T. S. Eliot: a study in character and style
by Ronald Bush
Oxford University Press, £17.50
ISBN 0 19 503376 0

Every critic of modern poetry, whatever his or her ideological orientation, must at some time feel the lack of a fully documented biography of T. S. Eliot. The picture we have at the moment is spotted with gaps and blurs, and surrounded by rumour and speculation – a situation which Michael Hastings's recent play *Tom and Viv* boldly and controversially exploited. Ronald Bush's new study promises something more authoritative, in the form of what his blurb describes as "an interweaving of biography and sophisticated literary analysis . . . drawing on much unpublished material". In the event, we get something less: scarcely any unpublished material (certainly nothing crucially significant), and a book conservative in approach and assured in manner, safely covering familiar territories of interpretation.

Bush's thesis is that Eliot's poems "mime the central configuration of their author's psyche", but he is unable to shed much new light on precisely what constituted that psyche. An aired predictability hangs disappointingly over every chapter. There is much solid discussion of Eliot's ideas about "sincerity" and "impersonality", about his "religious conversion", about his "need to impose clear moral outlines on the world". There is talk of the tension he felt "between romantic yearning and intellectual detachment" and the effort he made to reconcile thought and feeling. None of these matters can be ignored by anyone writing about Eliot, but it is hard to feel that Professor Bush advances the arguments much beyond the first-generation commentaries of Cleanth Brooks, Helen Gardner, or F. R. Leavis.

The book concentrates firmly on the accepted canon of major poetry and its evolution from the "highly charged" *Waste Land* to a "masterpiece of deferred immediacy", the *Four Quartets*. The chapters on the 1917 and 1920 volumes are sadly skimpy, but *The Waste Land* is lucidly observed in relation to Eliot's own pathological anxieties as a poem which (to put it at its simplest) was a highly emotional response to the problems of his life in London and his closest relationships. The remainder of the book takes us through the various degrees and strategies of self-control practised in *The Hollow Men* and *Ash Wednesday*, through to the dedication to Anglo-Catholicism and the long gestation of the *Quartets*, achieved by "a man reasoning to himself in solitude", in search of dogma and the wholeness of mind that he so celebrated in Dante.

Throughout, Bush is accurate, sensitive, and considered. He communicates a strong sense of the poet who, as "East Coker" has it, was "trying to learn to use words", and he never makes the mistake of abstracting arguments from the texture of the poetry. He deals adequately with the changing influences of French Symbolism and Jacobean drama and continues the time-honoured game of source-hunting, emphasizing the presence of Pesse in *Coriolan* and Valéry in *The Hollow Men*.

Yet I cannot honestly say that the many questions that Eliot's poetry pose to me are answered here; nor does the construction of Eliot's "character and style" emerge as anything but monolithic. Where, for instance, is Eliot the prankster and wit, the admirer of Marie Lloyd, the poet of *Practical Cats*, the brilliant mimic of Cockney speech, and what effect did these aspects of his personality have on his major poetry? And why did Eliot lose – or edit out – a whole range of ironies, colloquialisms, and rhythms from his later work?

What Bush reinforces is the image of Eliot as the classic modern poet, writ large and serious, self-consciously troubling himself with great spiritual dilemmas. As such his book may confidently be recommended – but it is not the radical reassessment that many of Eliot's readers are waiting for.

Rupert Christiansen

Rupert Christiansen has written on the critic Lionel Trilling.

The spirit of the age

Hazlitt: the mind of a critic
by David Bromwich
Oxford University Press, £19.50
ISBN 0 19 503343 4

David Bromwich's book is the second substantial study of Hazlitt to have appeared in the last five years, and in most respects it complements very satisfyingly its predecessor, John Kinnaird's *William Hazlitt: critic of power* (1978). Both authors see Hazlitt as an undogmatic critic, opposed to system but by no means lacking in intellectual rigour, whose rediscovery may prompt a shift in established views of the British Romantic period.

Bromwich's version of the fierce challenge offered by Hazlitt to our ideas of the period has a distinctly post-structuralist ring to it. For Hazlitt, nature is something chosen rather than given, and, notwithstanding some apparent inconsistencies, he is an essentially non-mimetic critic, developing the concept of an imaginative "second nature". The artist neither gives us back our experience as we knew it, nor offers a wholly self-sustaining universe created by art. Rather he demonstrates in Hazlitt's words what nature "would be in conceivable circumstances, and under implied conditions". Bromwich writes: "Contemplating a second nature we find our gaze turning gradually inward, and in the end our knowledge of art modifies our self-knowledge." Hazlitt seeks to demystify genius, refusing to admit any difference between genius and common sense, and he is himself a far from innocent reader, an expert at spotting political and philosophical blind spots in writers such as Burke and Wordsworth. (Bromwich's pursuit of this topic leads to an exceptionally stimulating deconstructive reading of *The Excursion*.)

The version of Romanticism which this book questions by way of Hazlitt is essentially Coleridgean. Bromwich endorses Hazlitt's rejection of Coleridge's aestheticism, inflated clerisy, reconciliation of opposites, symbolism, and essential passivity; he sees Hazlitt in contrast as essentially an allegorical reader, consistently radical, refusing to separate art from political and philosophical discourse, one whose criticism is never a quest for organic unity in the work under discussion. Among the consequences for practical criticism is a disturbing view of *The Tempest* which gives full weight to Caliban's case against legitimacy, rather than excluding him from a closed circle of a redeemed humanity as Coleridge does.

One of the most impressive features of this book is its teasing out of Hazlitt's philosophical and theoretical relationships with his predecessors, contemporaries, and successors. We are shown how, especially in his early seminal *Essay on Human Action*, Hazlitt developed ideas in active encounter with Locke, Hume, Reynolds, Burke, Johnson and Abraham Tucker. Thus his crucial concept of the disinterested imagination as a principle of action represents a radical departure from Hume so that, Bromwich writes, "the disinterested mind simply feels more than the selfish, and sees more". The associated concept of impersonality, in which, "to adapt Hazlitt's usual comparison, the poet not confined to his own personality has the same advantage over the poet thus confined that the house on a cliffside with windows on all sides has over the cubicle with a narrow grating that looks into a dirty alley", was adopted to marvellous effect by his disciple Keats, but the poet's misleading phrase "negative capability" foreshadows the narrowing distortions by Matthew Arnold and T. S. Eliot into a negation or extinction of personality.

The central importance of "power" is no less evident in the new study than it was in Kinnaird's book, and Bromwich carries further the exploration of its complex ramifications. Among the aspects which he discusses are: the way in which Hazlitt's admiration for power in art and public life became acceptable to himself by being associated with the Burkean sublime but admired "not as a terror-producing agency but as the most general name we have for energy of mind"; the dangerously irresistible ascendancy of the power of genius over common sense because of its near alliance with it; the danger also of imaginative power without understanding; the distinction between an art of propriety and an art of power aimed at converting its audience; and the desirability (and difficulty) of linking power as a necessary attribute of the poetic imagination with sympathy, a link which Hazlitt saw forged in Edmund Kean's interpretation of Othello and Shylock, but not in his Coriolanus.

Bromwich aspires to imitate Hazlitt's aphoristic, "non-sequacious" style, and this results in some overwriting, some obscurity, and some difficulty in following the overall argument; but in general he writes most engagingly, and on balance the book, though very demanding, is grateful to read, often taking the form of substantial quotations accompanied by searching commentaries. It will amply repay repeated consultation, being full of illuminating insights which will considerably deepen our understanding both of Hazlitt and of the period as a whole.

For not only did Hazlitt, as Coleridge discerned at an early stage, have guts in his brains, but, as Bromwich delightedly comments, adopting Brecht's aphorism on Karl Kraus: "When the age laid hands on itself, he was the hands."

J. H. Alexander

Dr Alexander is lecturer in English at the University of Aberdeen.

BOOKS

Luther's humanist challenge

Rhetoric and Reform: Erasmus's Civil dispute with Luther
by Marjorie O'Rourke Boyle
Harvard University Press, £20.40
ISBN 0 674 76870 1

It was Pliny, writing of insects, who wrote in the *Natural History* that "We marvel at elephants' shoulders carrying castles . . . whereas really Nature is to be found in her entirety nowhere more than in her smallest creatures." So when Erasmus gave Luther due respect by likening him to the massive beast, of classical zoology, it was a simile that helped his cause, because his own flighty behaviour could, arguably, soften this adversary's hide, mute any trumpeting and even goad the foe to submit to a course of weight-watching.

Rich in such classical allusion, Dr Marjorie Boyle's monograph certainly provides fine fare for those who would re-acquaint themselves with the great debate of 1525 when Erasmus set about instructing Luther in the conduct of theology itself. As expressed in his introduction to *Diatriba*, "Among the difficulties, not a few of which confront us in divine literature, there is hardly a more impassable labyrinth than that concerning freedom of choice." Luther was to state the opposition case by arguing that free will was no subject for disputation, but rather an error for condemnation; but the humanist in Erasmus was convinced that the issue gave discussion of the conduct and resolution of conflicting texts of scripture full scope, as well as serving to engage his rival in a substantial matter that figured significantly in the philosophical disputations of Cicero.

In his inquiry, Erasmus first examined passages of scripture that appeared to favour freedom of choice before turning to those that seemed to oppose it. Outlining in this way the various arguments on both sides, he sought a moderation of viewpoint. But in estimating the most probable opinion, he nevertheless suspended judgment until consensus could decide. This for Luther constituted the flexibility or scepticism of his whole position. Such matters might not be clear to him, however clear they remain with God. "From rashness in definition my spirit shrinks, not from assertion", he wrote; and Dr Boyle is at pains to protect him from the misrepresentation he has so often suffered in accounts of the war of words with Luther. For as he argued in *Diatriba*, scripture by no means provided clarity on the question, and it followed that consensus would be difficult to achieve. He preferred to doubt with the humanist rather than dogmatize with the scholastic; and chose an approach that gave him insights into the mind of Christ. As for Luther himself, Erasmus insisted that he was "neither his accuser, nor patron nor judge." No wonder, as Dr Boyle correctly emphasizes in these pages, his tract is best seen as a classical exemplar, a humanist's bid to submit Luther's work to the scrutiny of a "senate of learned men", and the work of one whose principal aim was in no sense mere refutation of a rival.

Luther entirely grasped the whole approach, but chose to misunderstand Erasmus because his cause could only thrive in the teeth of opposition. Polite dissent in civilized debate would not forward the cause of Reformation, and, in assertive mood, Wittenberg's professor of Old Testament studies repudiated compromise with all the fervour and rude assertiveness of the adversary. "There is no middle kingdom between the kingdom of God and the kingdom of Satan . . . they are mutually and utterly in contradiction to one another." And Dr Boyle makes much of what she terms "Luther's Stoic posture" coupled with the Reformer's concentrated "search for true and pious commitment". Luther found this in Paul, for in the words of his rhetorical lament, "What is more miserable than uncertainty?" Scepticism, like Satan, he placed behind him; and the sum of both standards Erasmus was judged as the Reformer's demand for absolute certainty damned civilization itself out of hand. Yet whoever reads Erasmus cannot cease to commend the way his stand against Luther strove hard and long to back persuasion over force.

Dr Boyle's study provides a valuable commentary on the classical roots of the *cause célèbre* and is a rare example of genuinely impartial and scholarly exposition of a profound and complex issue.

Peter Newman Brooks

Dr Brooks is a fellow of Robinson College, Cambridge.

Knights in shining armour

Chivalry
by Maurice Keen
Yale University Press, £12.95
ISBN 0 300 03150 5

In 1227, Ulrich von Lichtenstein, a Bavarian knight, set out to ride on a journey of knight-errantry from Italy to Bohemia. More fantastic than Don Quixote, he dressed as Venus complete with long blonde plaits, challenged all comers to joust in his lady's honour, and (so he claimed) broke the spears of three hundred knights who opposed him. Each of the vanquished had to bow to the four corners of the earth as a token of respect to the lady.

Ulrich is one of the odder characters of Dr Keen's fine study of chivalry in medieval Europe, with all its flamboyant and often peculiar features. Chivalry, as the author explains, emerged distinctively in the eleventh century. An older epic warrior tradition, with the values of loyalty, honour and generosity which we observe in *Beowulf*, was transformed by a new aggressive Catholicism in religion and by the rise of the mounted knight in warfare. These elements combined to make a powerful and volatile compound: chivalrous Christian knighthood, which went on reacting and exploding for the rest of the middle ages and beyond.

It is the power and volatility of the compound that make this book so interesting. The elements of chivalry clashed with each other almost as much as they harmonized, setting up all kinds of dramatic tensions and strange anomalies. Equally, chivalry readily combined with other cultural forces: the love cult of the twelfth century, the scholasticism of the thirteenth, and the growth of painting and spectacle in the later middle ages. This means that the historian needs to set up a wide loom if he is fully to do his subject justice. War, society, literature, art and law are all strands of the tapestry, and Dr Keen handles and weaves them together with superb skill and an enviable command of his diverse materials. His geographical framework is a wide one too, and he keeps a most judicious balance between the five major nations of western Europe, making his book a truly general one.

The broad survey is complemented by several detailed studies of high accomplishment: how knights were made, the idea of nobility, chivalric literature, the founding of knightly orders, tournaments and heraldry. And although we stay mainly in the man's world of the camp, the armoury and knightly freemasonry, there is a good deal of evidence in passing about women: fantasy figures, patronesses, supportive wives, and even (in Christine of Pisa) an authoritative female writer on war and knightly forms.

In his final chapters Dr Keen reviews the changes that took place in chivalry up to his closing date of 1500. While superficially much was the same throughout the middle ages, chivalry (particularly in its tournaments and spectacles) grew ever more elaborate, recreational and separate from war itself. The author deals a convincing blow at the moribund theory, prolonged by Johan Huizinga, of the so-called decline of chivalry. The institution certainly changed and developed, but decline was a notion rather than a reality, and the notion was always there; writers asserted decline as early as the twelfth century. In the end, chivalry survived the coming of artillery and lasted throughout the sixteenth century.

If there is any cause for regret about this excellent book, it is that we have to leave the author's perceptive and entertaining company with Henry VIII and Charles V still in the future. As far as the middle ages are concerned, however, this is a most readable and comprehensive survey: stimulating, informative, a splendid creation of context.

Few have better combined the elements of cultural history than Dr Keen has done in *Chivalry*.

Nicholas Orme

Dr Orme is reader in history at the University of Exeter.

A gilt-bronze effigy by William Torel of Henry III, 1291. From David Piper's *Kings and Queens of England and Scotland* (Muller, £7.95).

Medieval economic crisis

The Crisis of Feudalism: economy and society in Eastern Normandy c 1300–1550
by Guy Bois
Cambridge University Press, £35.00
ISBN 0 521 25483 3

The title and sub-title of Guy Bois's classic book must on no account be taken to imply that this is really a local history of part of Normandy in the later middle ages which has been given wider allure with the eye-catching phrase *Crisis of Feudalism*. It is, on the contrary, a successful attempt to exploit the relatively rich documentary sources and more or less central position of Normandy not only to explain the causes and nature of the late medieval economic crisis and describe its course, but also to elucidate the essential mechanisms of the late medieval economy.

One may dispute Professor Bois's claim that the "centre or core" of the "feudal world economy" was "in northern France, in the Parisian basin", with "a ring of brilliant secondary zones" beyond it, but one can hardly deny that he has made excellent use of his chosen part of this area to construct and illustrate his thesis. His book is indeed a brilliant example of how to reach general conclusions, how to write general history, from a painstaking and perceptive examination of significant detail.

In his instructions on how to read his book, the author suggests that non-historians should skip through the first part and "above all avoid the whole of the first chapter". With this advice I cannot concur. I found myself fascinated by the intricate discussion about demographic sources in the first chapter. What precisely was a "hearth" in terms of numbers of persons? Thereafter, in the rest of part one, the general reader as well as the expert will surely wish to follow the author in detail as he analyses demographic changes, reviews the development of prices and wages, reconstructs the gross product from a single source, namely the records of tithes.

After this consideration of economic indices, the peasant holding, the basic building brick of the economy, comes under scrutiny; then the two-fold role of the lord, as producer himself in his demesne and as appropriator of his subjects' product through his various rights over land and men. Finally, in part three, Professor Bois traces the detailed course of economic events with exceptional clarity and conviction while still basing himself firmly on the sources.

The eight-year time-lag between the appearance of the French original and the (anonymous) English translation is unfortunate but not untypical: Fernand Braudel had to wait almost twenty-five years before *La Méditerranée* appeared in English. A curious feature is its failure to refer to English translations of French books mentioned. Surely a book designed for the English-speaking reader might be expected at least to include such transla-tions in the bibliography alongside the French originals? The situation becomes almost comical when we find Malthus's *Principles of political economy* cited only in a French edition of 1969!

Although, in the main, it is beautifully printed and produced, the illustrations and tables are poor. The four photographic plates are badly reproduced and inadequately captioned, and in many of the tables the dates are so badly printed as to be nearly illegible.

Thus one can hardly claim that the purchaser is getting value for money.

Richard Vaughan

Richard Vaughan is professor of history at the University of Groningen in the Netherlands.

Sturdy alpines

The Reformation of the Heretics: the Waldenses of the Alps 1480–1580
by Euan Cameron
Clarendon Press: Oxford University Press, £22.50
ISBN 0 19 822930 5

The Waldensian communities of the south-west French Alps formed one of the few small pockets of heresy to have survived the attentions of medieval inquisitors and to provide a continuity of religious dissent into the Reformation period. A brutal and venal persecution in 1487–88, masquerading as a crusade, failed to wipe out these sturdy alpine dissidents. Indeed, they even fought back, in the 1670s attempting to assassinate the inquisitors and bringing a successful lawsuit against the crusade of 1487 for its illegal measures.

The memory of the Waldensians suffered distortion from two sides, however. The Catholics associated with the more lurid brands of medieval heresy, from Catharism to the alleged sexual licence of the Free Spirit and the witchcraft allegations against the Vaudois of the 1460s. The Protestants began from the late sixteenth century to claim them as forerunners of their own faith, citing them as evidence that a "true church" had existed independently of the church of the Antichrist, the papacy.

Dr Cameron's intelligent and judicious study rescues the Waldensians from the myth-making of both confessions. Carefully refusing to be misled by the assertions of scholastic treatises, inquisitorial prejudices or Protestant propagandists, Cameron has reconstructed Waldensian beliefs from their own depositions, indicating that they did not so much diverge from Catholic beliefs, as run parrallel to them in a form of morally superior, puritan rigorism. The few orthodox beliefs they explicitly rejected (invocation of the saints, purgatory, the distinctive power of the priesthood) were a matter more of nuanced preference than of a logically worked out theological position. Protestants found them too easy-going in their willingness to compromise with the religion of Antichrist. They had to be re-educated through the energetic work of Calvinist pastors, who often enough found themselves frustrated in the task. Cameron locates this difficulty in the nature of Waldensian belief, dependent on oral transmission, unconcerned with logical inconsistencies, a lay rural religion, as unimpressed by the hectoring of the Protestant as of the Catholic clergy.

This is an important study because it shows the nature of two vastly different attempts to "christianize" a rural minority by educated clerical elites, Catholic and Protestant. If the Waldensians were ultimately assimilated into the reformed tradition, there was nothing inevitable about the process. It was slow and painstaking, spread over two or three generations, and may never have been successfully completed.

Here Dr Cameron confirms what has been suggested for some parts of Germany, and suggests, as he does throughout this excellent book, that we rethink our assumptions and categories about the Reformation and its forerunners in religious dissent.

R. W. Scribner

Dr Scribner is a fellow of Clare College, Cambridge.

BOOKS

Cultural subsets

Human Nature and Biocultural Evolution
by Joseph Lopreato
Allen & Unwin, £30.00
ISBN 0 04 573017 2

The spate of bad books about human sociobiology shows no sign of abating. Although the author of this one quotes from Emil Durkheim and Vilfredo Pareto, the voice and the argument come straight from the pages of E. O. Wilson.

The author's approach is "based on the hypothesis that innate predispositions and cultural-environment factors cooperate to determine human behaviour and socio-cultural forms". In a trivial sense this is obvious: human beings have an innate predisposition to walk upright on two feet and all "socio-cultural forms" presuppose that this is so. Lopreato's verbose index, however, contains no reference to bipedalism. Similarly, human beings have an innate predisposition to learn to talk, language being a key component in the cultural environment. But there are thousands of mutually incomprehensible human languages, and the way in which language universals are linked to the other cultural universals (if they are) is a mystery about which we as yet know very little. Although this theme ought to be central to any sociobiological discussion, it is given little attention here.

If human sociobiology is not to degenerate into a crude form of scientific racialism, it must be concerned with cultural universals; this much Lopreato seems to understand. The argument is that human beings, as a species, are genetically predisposed to behave in specific ways, the "cultural universals" being responses to those innate predispositions. As to what these alleged cultural universals might be, Lopreato claims that they include "age-grading, sports, community organization, cosmology, divination, ethics, food taboos, hospitality, kin groups, law, magic, propitiation of deities, ritual, sexual restrictions, status differentiation, weather control, defense of and/or attachment to territory, extreme curiosity or explorative behaviour, symbolization, reification and personification, dominance-subordination, self-sacrifice for others, and vengeance, among others". Comment is difficult: the ethnographic facts covered by the blanket category "human culture" can be sorted into any number of sub-categories, of which this particular list is a quite arbitrary selection.

But what is the point? Consider, for example, the relatively unambiguous sub-category "food taboos", which Lopreato himself does not discuss. At some level we presumably have an innate capacity to distinguish food from non-food. Adults who have learned a set of food taboos from their cultural environment extend this innate discrimination and come to categorize certain nourishing and perfectly digestible foodstuffs as "non-food". Biology and cultural environment have then combined to "determine" human behaviour: QED. So what? The significant fact is not that food taboos are of widespread and perhaps universal occurrence but that particular food taboos are enormously varied and that no particular food taboo is universal. The puzzle is not that food taboos should exist but that they should be so diverse. This is a topic about which sociobiologists have nothing whatever to say.

Lopreato's discussion of sexual selection in man, which lies at the base of the key sociobiological concept of "inclusive fitness" is, if anything, even more misleading than that of his predecessors. There is evidence that certain species avoid mating with close kin. Although this predisposition is possibly present among primates, male gorillas in the wild have been observed to engage in fertile mating with their daughters and their full sisters. Therefore, if innate aversion to close kin mating occurs in man, it needs to be demonstrated. The evidence must come from ethnography; but ethnography does not support the hypothesis.

Lopreato tells us that: "To mate with a close relative (parent, child, sibling) is to commit incest. The incest taboo, a rule that prohibits such matings, is a cultural universal. Very rarely do human beings approve of mating between two individuals whose coefficient of relationship is greater than 1/8. When the rule is broken the probability of defective offspring is greatly increased . . .". This definition of incest is Lopreato's own; it does not correspond to any legal or dictionary specification. Although the expression "coefficient of relationship" is nowhere explained, it can be gleaned from other references that Lopreato is saying that it is rare to find approval of sexual matings between individuals who are more closely related than first cousins. This is simply wrong. In South India there are populations running into millions in which there is a formal preference for marriage with a sister's daughter and we know that in Roman Egypt during the early centuries of our era ordinary peasants regularly married their full sisters.

Generalizations about cultural universals are hard to test. However, if well-established facts of ethnography are systematically ignored the whole discussion becomes absurd. If the human sociobiologists could get together with the students of animal behaviour and the comparative ethnographers, they might be able to tell us something about the theoretical limits of human cultural variability. That would be an extremely interesting kind of inquiry. The E. O. Wilson/Lopreato style of sociobiology, however, is something entirely different.

Most of the text of this long-winded, pretentious book consists of gobbledegook such as "rational self-identification is the primary selector of the idea of the soul". Readers will be wasting their time if they try to discover what is meant.

Edmund Leach

Sir Edmund Leach is emeritus professor of social anthropology at the University of Cambridge.

Sampling methods

Ecology: principles and practice
by W. H. Dowdeswell
Heinemann Educational, £6.95
ISBN 0 435 60226 8

Intended to be a "reader and a source of reference for school sixth formers and first year university students" and to provide a "useful guide for teachers", this easily readable and concise book succeeds admirably in its aims.

The organization of the book is excellent. Essentially, ecological principles are outlined in the first four chapters; the next three chapters deal with sampling methods, measurements and presentation of data; and six particularly impressive chapters then outline many useful investigative approaches to a variety of ecological communities found in the British Isles. A final chapter, on ecology and man, deals with such topics as pollution, conservation, pest control and disease vectors.

Each chapter finishes with a clear summary, thus reinforcing the salient points and terms introduced. And at the end of the chapters on ecological communities, there are some very helpful suggestions for investigations. The book, which is well indexed, contains some useful addresses, a glossary of terms, good diagrams, and many black-and-white photographs.

Those chapters concerned with collecting, sampling and measuring provide helpful advice on the use of simple pieces of apparatus, most of which could be made or improvised without resorting to expensive purchase. It is also good to see a chapter dealing with the presentation, reliability and validity of data, although inevitably in a book of this size, the author can only touch on some of the statistical methods appropriate to certain types of ecological data. He quite rightly draws attention, however, to the problems in making sense of the data and warns the reader "that it is committing statistical heresy to lump together data that are heterogeneous." Certainly, if a student is in doubt about what statistical test to use, he or she would be wise to consult the more extensive bibliography or seek professional advice.

This much needed text should certainly give confidence to teachers and students who are not very familiar with investigative methods in ecology. Furthermore, it provides a nice counterbalance to the wealth of books recently published on cell and molecular biology, while at the same time offering genuine opportunities for simple, though worthwhile, investigations at sixth-form and first-year university levels.

Michael Tribe

Michael Tribe is lecturer in biology and education at the University of Sussex.

An anthology of articles on *Conceptual Issues in Evolutionary Biology* has been edited by Elliott Sober and published by MIT Press at £36.00 and £17.95.

Foraging for food

Instinct, Environment and Behaviour
by S. E. G. Lea
Methuen, £2.95
ISBN 0 416 33640 X

The behaviour of animals is systematically examined both by ethologists, who see it as part of the general study of nature, and by psychologists, whose main concern is with what it can contribute to understanding the human mind. The past decade has seen major changes in both disciplines, not least of which is an unusual interest in what the other is doing. Lea's book provides for the general reader a particularly lucid and stimulating introduction to these developments.

The major achievements of classical ethology in the era of Konrad Lorenz and Nikolaas Tinbergen were to provide a detailed analysis of instincts, in terms of fixed action patterns and releasers, and an elegant theory of how they have evolved. Subsequent evidence has shown that many action patterns are by no means as fixed as was formerly believed and has detailed the complicated ways in which their development is affected by environmental variables. However, rather than summarize such developmental studies, Lea has chosen to concentrate on the fundamental shift in ethology that has resulted from recent changes in evolutionary theory.

The early ethologists believed that natural selection favoured instincts which benefited the species as a whole. Current evolutionary theory holds that selection generally operates at the level, not of the species, group or individual, but of the gene. Thus, the display of the peacock is now seen as an advertisement put out by an individual gene to influence another animal in a way that suits its own interests. This changed conception has had an obvious effect on the analysis of sexual and parenting behaviour and also of the function of aggressive, appeasing and altruistic actions. Most importantly, it concentrates attention on the general question of why even closely related species can vary so enormously in their social relationships.

The major determinant of an animal's social behaviour is probably the availability of food. According to an extreme version of this viewpoint, "a female is, at the most basic level, a device for turning food into offspring . . . the distribution of females will therefore depend on the distribution of food", while a male "is a parasite upon one or more females . . . and the distribution of males will therefore depend on the distribution of females". The study of how animals obtain food, and the search for general principles of foraging behaviour, has become an especially lively area of research.

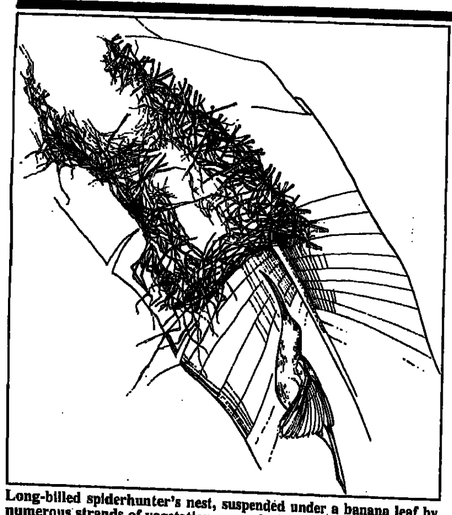
It is also one in which psychologists have played a part, since it turns out that the special learning abilities they have studied are utilized to the full when an animal goes foraging. Despite the relatively narrow range of species and behaviours examined in the psychological laboratory, the principles of learning they have yielded show a surprising degree of generality. Lea's explanation is that learning abilities evolved mainly under pressure to solve problems of foraging – how to obtain food, while not becoming food – which take the same general form in most species.

What about people? There is no insistence here on the simplistic parallels that have too often been drawn between human and non-human behaviour. In Lea's terms, a regrettably large number of these have relied either on the "any-animal-will-do" fallacy – for example, jumping directly from sexual satiation in bulls or social deprivation in thesus monkeys to some human problem – or on the "self-terminating search" – arguing for the "naturalness" of something some people do by looking through the animal kingdom only until a comparable example is found. He is also well aware of the importance of cultural transmission, in non-human species too, and writes interestingly of the parallels that can be drawn between gene selection and the selection of "ideas" within a culture.

Yet, for Lea, what gives ethology "its spice and zest" is what it tells us about our own species. Here he offers the account of human uniqueness that is becoming the current consensus within psychology: at some evolutionary stage, *Homo sapiens*, possibly as a result of being a cooperative hunter, acquired a special learning ability for language, just as pigeons acquired one for homing; but language transformed his hitherto unremarkable learning abilities so that for the first time rational foresight, the manipulation of concepts and a massive utilization of past experience appeared in the world. In view of such uniqueness, the discoveries and theories so admirably summarized here can suggest interesting ideas about some aspects of human behaviour, but the major claim is that "we cannot understand what it is to be human unless we know what it is to be other than human".

R. A. Boakes

R. A. Boakes is lecturer in experimental psychology at the University of Sussex, and author of "From Darwin to Behaviourism: psychology and the minds of animals", published by Cambridge University Press earlier this year.



Long-billed spiderhunter's nest, suspended under a banana leaf by numerous strands of vegetation secured with stitches of plant fibres and spider silk. From Michael Hansell's *Animal Architecture and Building Behaviour*, published by Longman at £25.00.

Images of the small

An Introduction to the Optical Microscope
by Savile Bradbury
Oxford University Press, £2.95
ISBN 0 19 856401 5

As the first in a series sponsored by the Royal Microscopical Society and intended to deal with "all aspects of microscopy" at "all levels of interest and readership", this booklet is a good example of the common current practice whereby books are initiated by editors or publishers, rather than by their authors. This book presumably came into being because the editor thought that a series of books on microscopy must have an introduction to the optical microscope, rather than because it was clear that there was an urgent need for such a book. There is, indeed, no shortage of introductions to the microscope, as Dr Bradbury's good brief bibliography shows.

Some of the series will cover "the basic understanding and use of the instruments", others techniques and applications. Librarians will have to be careful lest they find themselves duplicating material already on their shelves. As with gramophone records, an extensive range of available versions, welcome in theory, may be a source of perplexity when it comes to actual purchase.

Dr Bradbury adopts a traditional approach. After introducing some elementary optics and outlining the basic construction of the microscope, he then deals with the essentials of magnification, resolution and image formation. Thereafter, he describes separately the main components of the microscope. A final, useful chapter on practicalities includes a key to problems ("Is any form of image present? No, Continue; Yes, Go to 10"), which James Thurber – who had some difficulty with the microscope, eventually contriving to adjust it so that he saw a reflection of his own eye – might have found useful.

Throughout, the information is accurate and on the whole very lucidly presented, if necessarily in somewhat compressed form. There are clear diagrams, an index and a helpful glossary (to which, perhaps, "aspheric" and "stardioid" might have been added). The book is not, however, for the beginning student or, indeed, any new user of the microscope, but rather for someone who has already acquired some practical familiarity with the instrument and wants to learn a bit more about its theory or the advantages of different kinds of illuminating system or objective. Such readers might reasonably have expected a fuller discussion of image formation and resolution, in terms of diffraction theory.

The most expensive and best-adjusted microscope is wasted in the hands of an unskilled user. The microscopist has to learn to see and interpret what is in the image, which takes time and patience and practice. This vital factor in microscopy surely deserves as much emphasis in introductions to the subject as, say, the niceties of the distinctions between different types of condenser. It would have been good to see this point discussed.

A. V. Grimstone

A. V. Grimstone is lecturer in zoology at the University of Cambridge, and editor of "Journal of Cell Science".

The art school degree show season is now well and truly open, an opportunity to see the best work of young artists and designers. From June 22 to 30, the first BA honours silversmithing, jewellry and allied crafts students from the Sir John Cass Faculty of Arts at the City of London Polytechnic will be showing their work. Liz May's "Two Pins" (above) look massive and sculptural; in reality they are made up of paper, nylon rods and elastic. These and similar works are on show at Gallery 2, Five Dials, 36 Earlham Street, Covent Garden. Phone Susan Fortune on 01-283 1030 for details of opening times.

NOTICE BOARD

Appointments

HERIOT-WATT UNIVERSITY has conferred the title of honorary professor upon Mr Dabir H. Tehrani, manager of reservoir engineering at Britoil plc. From 1979 to 1982, Mr Tehrani was technical advisor to the Iranian Deputy Minister of Petroleum.

Three senior appointments at **GLASGOW COLLEGE OF TECHNOLOGY:** Dr Nicholas Zafaris, currently principal lecturer in economics at the Polytechnic of North London Business School, becomes head of the department of economics; Dr William Scott, presently principal lecturer in communications at Sheffield City Polytechnic, becomes head of the department of humanities; Mr Nejmul Hassan, currently at Napier College of Commerce and Technology, Edinburgh, becomes senior lecturer in business administration.

NEWCASTLE UPON TYNE
Lectureships: Dr V. C. D'Abrera (microbiology); Mrs A. Maguire (child dental health – part-time); Dr J. G. F. Powell (classics); Dr M. A. A. Cox (engineering mathematics); Dr M. J. Downie (offshore resource engineering); Dr M. J. Atkins (education).

BRISTOL
Personal professorships: Dr D. M. Armstrong (physiology); Dr O. T. G Jones (biochemistry).
Readerships: Dr A. D. P. Briggs (Russian); Dr F. Shaw (German); Dr R. Evans (physics); Dr B. Vincent (physical chemistry); Mr M. G. R. Hull (obstetrics and gynaecology); Dr T. J. Hill (virology, microbiology); Mr N. V. Lowe (law); Dr G. V. Jones (psychology).

BATH
Lectureships: Dr K. C. Molloy and Dr S. C. Parker (both chemistry).

Events

The third International Conference of the Jewish Law Association will be held at Hertford College, Oxford, from July 29 to August 1. Details from Ms Jean Nightingale on 0865 511869.

June 25 to 29 is "Energy Week" at the Polytechnic of the South Bank. The event, to be opened by The Rt Hon. Peter Walker MP, has been sponsored by the Centre for Energy Studies with the GLC and other sponsors.

Honorary degrees

The first director of the Open Tech, Dr George Tolley, has been awarded an honorary doctorate by the Open University. Other recipients of OU honorary degrees include broadcaster and botanist Dr David Bellamy and actress Janet Suzmann.

Dr Tolley now heads the quality branch of the Manpower Services Commission. He is also currently chairman of the continuing education committee of the Business and Technician Education Council.

Dr Bellamy, honorary professor of adult and continuing education at Durham University, also received an honorary doctorate from the OU. Janet Suzmann was awarded an honorary masters degree. Both were conferred at a ceremony in Preston.

Sixteen honorary degrees have been announced by the OU. Most are to be conferred at a series of ceremonies held throughout the country, when many of the OU's 5,510 graduates will receive their BA degrees.

Other honorary degrees, previously announced, included doctorates to Viscount Tonypandy, former speaker of the House of Commons, and broadcaster and writer Dr Jonathon Miller.

Chairs

Bristol University has appointed Dr Howard Giles to the chair in social psychology, in succession to Professor H. Tajfel. Dr Giles is currently reader in the department of psychology.

Dr A. C. Legon, reader in chemistry at University College London, has been appointed to the chair in physical chemistry in the University of Exeter.

Grants

LONDON, CHELSEA COLLEGE: Dr P. Quinn, £27,960 from MRC (mechanisms of freezing damage and cryoprotective strategies); Professor H. Baum, £1,000 from Roche Products Ltd (pathogenesis of tobacco smoke induced cephysema); Professor P. J. Peterson, £8,500 from BP International Ltd (chemicals in the environment); Professor P. J. Peterson, £5,200 from Riofinex North Ltd (biogeochemical exploration for gold and associated metals); Professor P. J. Peterson, £33,541 from Riofinex North Ltd (usefulness of various sampling media); Professor P. J. Peterson, £10,000 from United Nations Environment Programme (environmental data); Professor P. J. Peterson, £4,333 from UN Environmental Programme (climate fluctuations in first half of this century); Professor P. J. Peterson, £20,000 from Water Research Centre (trace metals in the UK); Professor P. J. Peterson, £22,000 from World Health Organization (technical appraisal in environmental monitoring); Dr B. V. Smith, £2,795 from SERC (transient intermediates formed in photolysis of cyclopropyl ketones); Dr A. J. Chapman, £18,265 from MoD (frequency of microwave pulser using low frequency sampling); Baroness Cox, £52,259 from DHSS (nursing education research unit); Baroness Cox, £50,357 from DHSS (clinical learning project); Mrs S. Robinson, £48,929 from DHSS (midwifery project); Dr J. Rosen, £2,000 from North West Thames RHA (inflammatory bowel disease); Professor A. Howe and Dr R. J. Pack, £17,106 from MRC (pulmonary hypoxia); Dr M. Cox, £18,386 from UKAEA (education computer materials on nuclear reactor physics); Dr M. Cox, £100,000 from BBC (CAL materials in science); Dr M. Cox, £35,000 from Longman group (revision of CAL materials in geography and economics); Mr W. Anderson, £11,600 from Nuffield Foundation (rise of Gothic civilization). **NEWCASTLE UPON TYNE:** Professor A. Aynsley-Green, £1,000 from Peel Medical Research Trust (effects of anaesthesia and surgery on urinary excretion of 3-methylhistidine in newborn infants); Dr P. G. Whittaker, £4,250 from Birthright (relation of plasma catecholamines to pregnancy associated hypertension); Dr T. Lind, £10,662 from Medical Research Council (maternal physiological adaptations during normal and abnormal pregnancy and relation to fetal growth); Dr J. M. Davison, £7a,741 from MRC (vasomeregulation of arginine vasopressin release in pregnancy); Dr A. J. Rugg-Gunn, £5,625 (effects of toothpaste); Dr H. Marsh, £17,104 from SERC (metallurgical coke); Professor F. Goodbridge, £240,844 from SERC/DoI/George Angus Fluid Seal Division of Dunlop Technology (teaching company programme); Mr A. H. Rhodes, £43,826 from SERC (loading characteristics of heavy goods vehicles and their effect on structural design of highways; Professor P. J. Hills, £219,359 from TRRL (urban safety project monitoring 11); Professor K. Kinsimont, £305,166 from SERC (design and test centre for microelectronic circuits); Professor P. M. Braiden, Mr J. A. Peanell and Mr D. A. Hofmann, £138,150 from SERC (improving accuracy of stress analysis of heavy duty industrial gears); Professor P. M. Braiden, £48,530 from SERC (thermal and mechanical loading on rock cutting tools); Professor R. N. Parkins, £24,095 from Ministry of Defence (effects of loading conditions on environment sensitive fracture); Professor R. N. Parkins, £205 from MoD (strain tests on copper alloys and titanium alloys); Dr R. Lesser and Dr D. V. M. Bishop, £18,605 from MRC (prospective study of language disorders in pre-school children).

Courses

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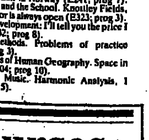

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Open University viewing

Saturday June 23

BBC1
6.30 Genetics. Polymorphism in snails (S299; prog 9).
8.40 Failure of Stressed Materials. New hips for old (T353; prog 5).
7.10 Photochemistry. Photochemical pathways (S341; prog 7).
7.35 Risk. High risk adoption (U201; prog 7).
8.00 An Ageing Population. Hospital (P252; prog 5).
BBC2
6.30 Ecology. Desert ecology (S323; prog 10).
8.50 Materials processing. Anyone can make a casting, but . . . (T352; prog 11).
7.10 Numerical Computation. Functional approximation case study (M351; prog 5).
7.40 Technology and Change 1750–1914. From coal to colour (A281; prog 2).
8.05 Education for Adults. The University of the Third Age (E355; prog 5).
8.30 Arts Foundation Course. Visual music (A101; prog 18).
8.55 Materials Engineering. A cut above (T252; prog 8).
9.20 Popular Culture. Readin' and a-rockin' (U203; prog 13).
10.10 Conflict in the Family. The professional network (P253; prog 6).
10.35 Personality and Learning. Socialization (E201; prog 10).
11.00 Inquiry. Symbolic deaths (U202; prog 8).
11.25 Basic Science for Technology. Title to be announced (T281; prog 5).
11.50 Computing and Computers. Designing a bank-up system (M252; prog 13).
12.15 Special Needs in Education. Vidar's right: special education in Norway (E241; prog 7).
12.40 Management and the School. Knowsley Fields, part 1: my door is always open (E322; prog 3).
13.05 Language Development: I'll tell you the price I charge (P252; prog 8).
13.30 Research Methods. Problems of practice (D206; prog 3).
13.55 Fundamentals of Human Geography. Space in the City (D204; prog 10).
14.20 Elements of Music. Harmonic Analysis, 1 (A341; prog 3).
14.45 Modern Art and Modernism. 1922 the first Russian Art Exhibition (A315; prog 18).
RADIO 3 (VHF)
6.55 Management and the School. Pastoral care (E323; prog 6).
7.15 Maths Foundation Course. Foundation Maths 9 (M101; prog 9).
7.35 Introduction to Calculus. Differentiation in action (MS263; prog 5).
23.20 Arts Foundation Course. Hiverntine Renaissance art (A101; prog 18).
23.40 The Nineteenth Century Novel and its Legacy. Thomas Hardy's poetry (A312; prog 10).

Sunday June 24

BBC1
6.20 Geology. Geology of the Alps, 2 (S236; prog 9).
6.45 Surface and Sedimentary Processes. The Athabasca Glacier: a case study (S335; prog 6).
7.10 Thermochemistry. Thermofluids and Energy, Bernoulli's Equation (T233; prog 5).
7.35 Political Economy and Taxation. The National Health Service (D333; prog 7).
8.00 Telecommunications Systems. Telephone Systems, a case study (T351; prog 10).
8.25 The Nature of Chemistry. Reactions in concert (S304; prog 19).
BBC2
6.25 Principles of Chemical Processes. Equilibrium yields and rates (ST294; prog 10).
6.50 Systems Behaviour. All change for System X (T241; prog 5).
7.15 Understanding Space and Time. An isolated Fact (S354; prog 10).
7.40 Conflict and Change in Education. The Progressive Revolution? (E205; prog 3).
8.05 Social Psychology. Analysing Interaction, 1 (D305; prog 3).
8.30 Science Foundation Course. Variations on a theme: skeletal adaptations (S161; prog 18).
8.55 Social Sciences Foundation Course. Social integration 2. Family context (D102; prog 30).
9.20 Maths foundation course. Networks and matrices (M101, prog 16).
9.45 Purpose and Planning in the Curriculum. Hansel and Gretel: what does the tale tell . . . (E204; prog 11).
10.10 17th Century England. Experimental philosophy (A203; prog 10).
11.00 Science foundation course. Space to think, time to learn: a portrait of Summer School (S101; prog 8).
11.25 An Introduction to Sociology. Housing in Birmingham 1 (D232; prog 8).
11.50 Biology: Form and Function. Cardiovascular control (S202; prog 19).
12.15 The Earth's Physical Resources. title to be announced (S238; prog 9).
12.40 The 19th Century Novel and its Legacy. Thomas Hardy and Wessex (A312; prog 9).
13.05 Inorganic Chemistry. Concepts and Case Studies Semi-conductors and the Sun (S247; prog 7).
13.30 Mathematical Models and Methods. Applying matrices: the algebra of re-orientation (MST324; prog 14).
RADIO 3 (VHF)
6.55 Modern Art and Modernism. Berlin Dada: Dawn Aces (A315; prog 19).
7.15 Personality and Learning. The Two Worlds (E201; prog 19).
7.35 Social Sciences foundation course Language and Authority (D102, prog 10)
RADIO 4 (VHF)
6.45 Industrial Relations. The Minister's role in industrial relations in the NHS (PT281; prog 5).
7.05 Shakespeare Marriage and Sexuality in Elizabethan England (A361; prog 4).
7.35 Contemporary Issues in Education. Skinheads in Tilbury (E200; prog 14).

Monday June 25

BBC2
6.05 Elements of Music. Harmonic Analysis, 1 (A341, prog 3).
6.30 Photochemistry. Photochemical pathways (S341; prog 7).
6.55 Maths Foundation Course. Networks and matrices (M101; prog 16).
7.20 Ecology. Desert Ecology (S323; prog 10).
7.45 Materials Processing. Anyone can make a casting, but . . . (T352; prog 11).
8.10 Shakespeare. Measure for Measure II (A361; prog 11).
8.35 Fundamentals of Human Geography. Space in the City (D204; prog 10).
9.00 Management and the School. Pastoral Care (E323; prog 6).
9.25 Organic Chemistry. Feedback on CMA 43 (S246; prog 3).
RADIO 3 (VHF)
6.55 The Earth's Physical Resources. Water for London (S238; prog 10).
7.20 Social Sciences Foundation Course. Social Integration 2. Family comedy (D102; prog 20).
7.45 Failure of Stressed Materials. New hips for old (T353; prog 5).
23.30 Basic Science for Technology. Title to be announced (T281; prog 5).
00.20 Rivet High rock adaption (U201; prog 7).
23.55 Social Psychology Analysing Interaction, 1 (D305; prog 3)
RADIO 4 (VHF)
6.15 Popular Culture. Subculture consumption (the Mods) (U203; prog 5).
6.35 Art in Italy. 1480–1580. Celibal and the Decorative Arts (A352; prog 6).
23.20 Modern Art and Modernism. Berlin Dada: Dawn Aces (A315; prog 19).
23.40 An Ageing Population. Social work with older people (P252; prog 12).
RADIO 4 (VHF)
23.30 Art and Environment. There is no now (TAD292; prog 16).
23.50 Shakespeare. Marriage and Sexuality in Elizabethan England (A361; prog 4).

Tuesday June 26

BBC1
6.05 Modern Art and Modernism. Klee and the Munich Revolution (A315; prog 20).
6.30 Technology and Change 1750–1914. From coal to colour (A281; prog 7).
6.55 Biology: Form and Function. Cardiovascular control (S202; prog 19).
7.20 Science Foundation Course. Rats and superrats, grasses and supergrasses (S101; prog 19).
7.45 Genetics. Polymorphism in snails (S299; prog 9).
23.50 Personality and Learning. Socialization (E301; prog 10).
23.55 Systems Organization: The Management of Complexity. Trading on Uncertainty (T343; prog 7).
00.20 Conflict and Change in Education. The progressive revolution (E305; prog 3).
RADIO 3 (VHF)
6.15 The nineteenth Century Novel and its Legacy. Thomas Hardy's poetry (A312; prog 10).
6.35 Popular Culture. Subculture consumption (the Mods) (U203; prog 5).
22.20 The Enlightenment. The Lisbon Earthquake (A204; prog 19).
23.40 Art in Italy 1480–1580. Celibal and the Decorative Arts (A352; prog 6).
RADIO 4 (VHF)
23.50 Open Forum – 19. Information programme for OU students
23.50 Popular Culture. The mid-sixties. part 1 (U203; prog 6).

Wednesday June 27

BBC2
6.05 Seventeenth Century England. Experimental philosophy (A203; prog 10).
6.55 Inorganic Chemistry: Concepts and case studies. Semi-conductors and the Sun (S247; prog 7).
7.20 Arts Foundation Course. Sacred Places (A101; prog 19).
7.45 Surface and Sedimentary Processes. The Athabasca Glacier: a case study (S335; prog 6).
23.30 Numerical Computation. Functional approximation case study (M351, prog 5).
23.55 Inquiry. Symbolic deaths (U202; prog 8).
00.20 Special Needs in Education. Vidar's Right: special education in Norway (E241; prog 7).
RADIO 3 (VHF)
6.15 Science Foundation Course The question why (S101; prog 9).
6.35 Open Forum – 19. Information programme for OU students
23.50 Social Sciences foundation course. Language and authority (D102; prog 10).
23.40 Instrumentation. Doppler Techniques (T291; prog 3).
RADIO 4 (VHF)
23.50 The Romantic Poets. Reading Romantic Narrative Poetry (A362; prog 8).
23.50 Contemporary Issues in Education. Skinheads in Tilbury (E200; prog 14).

Thursday June 28

BBC2
6.05 Introduction to Pure Mathematics. The Dodecahedral Group (M203; prog 15).
6.30 Systems Behaviour. All change for System X (T241; prog 5).
7.00 Understanding Space and Time. An isolated Fact (S354; prog 10).
7.45 Principles of Chemical Processes. Equilibrium yields and rates (ST294; prog 10).
RADIO 3 (VHF)
6.15 Man's Religious Quest. A Christian Testimony (AD208; prog 15).
6.35 The Enlightenment The Lisbon Earthquake (A204; prog 19).
23.20 Personality and Learning. The Two Worlds (E301; prog 19).
23.40 Shakespeare. Marriage and Sexuality in Elizabethan England (A361; prog 4).
24.00 Popular Culture. The Mid-sixties. part 1 • repeated programmes

Friday June 29

BBC2
6.05 Mechanistical Models and Methods. Applying matrices: the algebra of re-orientation (MST324; prog 14).
6.30 An introduction to Sociology. Housing in Birmingham 1 (D207; prog 7)
6.55 Systems Behaviour. All change for System X (T241; prog 5).
7.20 Understanding Space and Time. An isolated Fact (S354; prog 10).
7.45 Principles of Chemical Processes. Equilibrium yields and rates (ST294; prog 10).
RADIO 3 (VHF)
6.15 Man's Religious Quest. A Christian Testimony (AD208; prog 15).
6.35 The Enlightenment The Lisbon Earthquake (A204; prog 19).
23.20 Personality and Learning. The Two Worlds (E301; prog 19).
23.40 Shakespeare. Marriage and Sexuality in Elizabethan England (A361; prog 4).
24.00 Popular Culture. The Mid-sixties. part 1 • repeated programmes

THE NUFFIELD FOUNDATION

Social Science Research Fellowships

These Fellowships are to enable social scientists on the staff of universities and polytechnics in the United Kingdom to pursue their research interests on a full-time basis, free from teaching and administrative commitments. The awards will be for a minimum of one term and a maximum of a year. The Foundation will meet the research expenses of successful candidates, together with the cost of their institution of replacement teaching during their leave of absence. The institutions are expected to pay the Fellows' salaries during the period of Fellowship and to administer the payments made by the Foundation.

Application forms and further information from:
The Director,
Nuffield Foundation,
Nuffield Lodge,
Regent's Park,
London NW1 4RS.
Closing date: 1 December 1984.

(584)

Association of Sound & Communications Engineers Ltd
Institute of Sound & Communications Engineers

To Polytechnic & College, Senior Administrative Officers:
With an ever expanding membership the Institute of Sound and Communications Engineers is constantly looking for information about Courses in Sound Engineering, Recording and others related to the sound industry. We shall publish the results of all information gathered in our monthly journal PUBLIC ADDRESS, which is sent to all members and selected complimentaries, each month.
Your assistance in updating this material will be much appreciated. Thank you.
All information to The Secretary, ASCE Ltd, 46 High Street, Burnham, Slough SL1 7JH Tel. 06286-67833.

(584)

CLASSIFIED ADVERTISEMENTS

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Appointments

Universities
Fellowships
Research and
Studentships
Polytechnics
Colleges of
Higher Education
Colleges with
Teacher Education
Colleges and
Institutes of Technology

Technical Colleges
Colleges of
Further Education
Colleges and
Departments of Art
Administration
Overseas
Adult Education
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General Vacancies
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Courses

Personal
For Sale and Wanted
Holidays and
Accommodation

All box no. replies should be sent to THES at the above address

Universities

MURDOCH UNIVERSITY
Perth, Western Australia

Applications are invited from suitably qualified persons for the following positions which are to be taken up as soon as possible.

School of Social Inquiry

HALF-TIME LECTURESHIP IN PSYCHOLOGY
(tenurable) (Ref: 0725A)

University teaching experience in Lifespan Developmental Psychology is essential. Candidates must also have a Ph.D., published research, interests and experience in psychological aspects of language development.

The appointee will coordinate S241 Developmental Psychology II and share in the teaching of S240 Developmental Psychology I and S346 Developmental Psychology III.

HALF-TIME LECTURESHIP IN PSYCHOLOGY
(tenurable) (Ref: 0725B)

University teaching experience is essential. Candidates must have a Ph.D., published research, interests and experience in the Special Developmental Psychology of hearing-impairment.

The appointee will coordinate and teach in S300 Special Developmental Psychology I and S141 Introduction to Psychology.

GENERAL: Other areas of developmental psychology are covered by the existing academic staff.

As well as the undergraduate courses referred to, the successful candidates will undertake their share of other level teaching and research supervision as required by staff needs.

SALARY RANGE: $ A24,353 to $ A31,994 per annum - half per appointment.

These are tenurable appointments and conditions include superannuation, long service leave, outside studies programme, payment of fares to Perth for appointee and dependent family, removal and settling-in allowance and housing loan scheme.

PROCEDURE FOR APPLICATION

There is no prescribed application form but TWO COMPLETE SETS of detailed applications, quoting the appropriate reference number, including full personal particulars, details of tertiary qualifications, career history with description of posts held and areas of special interest, when available to take up appointment if offered and the names and addresses of three professional referees should reach the Personnel Officer, Murdoch University, Murdoch, Western Australia 6150, by 27 July 1984. Applicants resident in the United Kingdom, Europe or Africa, at the time of application should also forward ONE further copy to the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H OPF. (16471)

UNIVERSITY OF STIRLING
Department of Economics

LECTURER(S) IN ECONOMICS

Department seeks to appoint two Lecturers (one on a fixed term two year appointment). Applicants with interests in any areas of economics will be considered. Successful candidate(s) will be accepted to take up appointment on 1st September or as soon as possible thereafter.

Salary scale: £7,190–£14,125 (under review).

Further particulars are available from the University Secretary, University of Stirling, Stirling FK9 4LA. Tel: 0786 73171, Ext. 2314, to whom completed applications together with the names of three referees should be sent by 6th July, 1984. (16481)

Cranfield
Royal Military College of Science

RMCS, Shrivenham, Oxfordshire, provides a range of undergraduate, postgraduate and post-experience courses for mainly army personnel, and also supports an active research programme. From 1st August, Cranfield Institute of Technology will carry out the civilian teaching and research activities at the College and invites applications for appointments in the School of Electrical Engineering and Science.

Senior Lecturers/ Lecturers

Posts are available in each of the following areas:

Microwave and Radio Frequency Engineering. Candidates should have some research and/or development experience in RF, microwave or millimetric devices and systems.

Telecommunications Systems Engineering. Candidates should primarily have appropriate experience in analogue or digital communications systems. Areas of interests include coding, Specialist development/research in signal processing and electronic warfare would be desirable but not essential.

Guidance/Radar Systems. Candidates should have development/research experience in guidance systems, with a specialism in radar and/or radiometric systems; some military or defence industrial experience would be an asset, but is not essential.

Control Systems. Candidates should have a development/research interest in either control theory, or control engineering and instrumentation (including robotics and AI control systems). A specialism in guided weapon control systems would also be appropriate.

Whilst successful candidates will be expected to teach at all levels, the School has outstanding facilities and opportunities for research, development and consultancy.

Salaries, according to qualifications and experience, will be on University scales for Lecturers (£7,190–£14,125) and Senior Lecturers (£13,815–£18,825), which are currently under review.

Application forms and further details are available from: Personnel Department, (ref. GE/2290), Cranfield Institute of Technology, Cranfield, Bedford, MK43 0AL. Tel: Bedford (0234) 750111, ext. 3337.

Closing date for applications: 29 June. (14675)

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Commissioning is now underway of a new 17,000 m² complex which doubles the range of laboratories and specialist business and information technology facilities. As part of this development there is an exciting and challenging opportunity for an:

INFORMATION TECHNOLOGIST

The person appointed will be required to develop and manage in a creative way an Information Technology system appropriate to a high technology campus embracing academic and administrative functions.

Applicants should hold at least a primary degree or equivalent, and have extensive experience of working with senior management, and of applying computer technology to improve the effectiveness and efficiency of the organisation.

SALARY SCALE: IR£13,797 - IR£18,807 p.a.

Application material available from the Personnel Office, The National Institute for Higher Education, Plassey Technological Park, Limerick, Ireland to be completed and returned by 6 July, 1984.

UNIVERSITY OF STIRLING
CHAIR IN PSYCHOLOGY

Applications are invited from suitably qualified persons in Psychology and related disciplines without any restriction on the applicant's field of interest. Salary within the professorial range.

Further particulars are available from:
The Secretary
University of Stirling
Stirling FK9 4LA
Tel: 0786 73171, Ext. 2250
to whom applications should be sent by 30th September, 1984. (16492)

National University of Lesotho

PROFESSOR

IN THE DEPARTMENT OF AFRICAN LANGUAGES AND LITERATURE

Applications are invited from suitably qualified candidates for the post. The successful applicant will be expected to assume duties with immediate effect, and to teach the following subjects: General Linguistics, Comparative Bantu Linguistics, Grammar of Sesotho OR Sesotho Literature.

Salary (21st M1,7710 or $.6,841; M18,000–M16,800 per annum, depending on qualifications and experience).

Superannuation: Non-contributory pension scheme for appointees on permanent terms of service. Appointees receive 25% gratuity in lieu of superannuation for their first two years of the contract, rising to 27½% for each subsequent and similar period of service. Accommodation allowance for expatriates not qualifying under any superannuation scheme.

Accommodation is available at reasonable rentals. Passages and baggage entitlement on first appointment and on normal termination for appointee, wife and dependent children under the age of 21. Education allowance for expatriates. Vacation and study leave.

Detailed applications, to include curriculum vitae and names and addresses of three referees and statement of position required, should be sent to the Staff Officer, University of Lesotho, P.O. Roma 180, Lesotho, Africa. Applicants in the UK should also send a copy to the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London, WC1H 0PF. (16534)

The Papua New Guinea University of Technology

Department of Surveying and Land Studies

LECTURER/SENIOR LECTURER (SURVEYING)

Applications are invited for the above position in the Department of Surveying and Land Studies. Applicants should possess an appropriate surveying degree qualification and a high standard of five or more years of professional experience. The successful applicant will be expected to teach general surveying at undergraduate and postgraduate levels and to undertake research in some aspect of that field.

SALARY: Lecturer K16,680 – K18,672 per annum. Senior Lecturer K20,940 – K23,940 (The kina is 0.8218 approx); the level of appointment will depend on qualifications and experience.

Initial contract period is for approximately two years. Other benefits include a gratuity of 14½% of total salary earned, return passages for appointee, wife and family after 12 months of service, settling-in and settling-out allowances, 6 weeks paid leave per year, education fares and grants for children, assistance towards school fees, free housing, subsidised superannuation and medical benefit schemes are available.

Detailed applications (two copies) with curriculum vitae together with the names, addresses and telephone numbers of three referees and indicating earliest possible date of taking up appointment should be received by: The Registrar, Papua New Guinea University of Technology, Private Mail Bag, Lae, Papua New Guinea, by 30 July 1984.

Applicants resident in the United Kingdom should also send one copy to Association of Commonwealth Universities (Appts), 36 Gordon Square, London, WC1H 0PF, from whom further particulars and information may be obtained. (16472)

Universities continued

UNIVERSITY OF ULSTER (PROPOSED)
Faculty of Art and Design (Belfast)

LECTURESHIP IN FASHION

A currently practising designer is required for the post of Lecturer in Fashion from 1 October 1984. Applicants must have the ability and enthusiasm to initiate and develop a new Fashion option, at degree level, extending the range of options in the BA (Honours) Textiles and Fashion Design Course, within the overall programme of Applied and Decorative Art; and contribute to the Advanced Diploma Courses in Art and Design.

LECTURESHIP IN CERAMICS

A creative, practising potter is required for the post of Lecturer in Ceramics, from 1 October 1984, to contribute to the teaching on the BA (Honours) Fine Craft Design Course within the overall programme of Applied and Decorative Art and to the Advanced Diploma Courses in Art and Design.

LECTURESHIP IN FINE ART (one-year temporary appointment)

A Lecturer in Fine Art (Printmaking) is required from 1 October 1984 to contribute to teaching on the BA (Honours) Fine Art Course and the Advanced Diploma in Printmaking for a period of one year.

Applicants will be expected to provide evidence of particular interest and expertise in LITHOGRAPHY. It is expected that the successful candidate will make a general contribution to work in the Department and Faculty.

Teaching experience at undergraduate level would be an advantage.

Faculty of Science

LIMNOLOGY LABORATORY: 'NEW BLOOD' LECTURESHIP IN FISH BIOLOGY (Coleraine)

The laboratory has its principal interest in the ecology of Lough Neagh and associated rivers which sustain very valuable commercial and sport fisheries. Some of the fish species are known to be undergoing major population changes and all of them are inadequately studied.

A fish ecologist is required to develop research into fish populations; an experimentalist seeking answers to ecological problems might be acceptable.

This post has been established under the national scheme to encourage the appointment of younger members of the academic staff (the "new blood" scheme). Applicants should normally be under the age of 25 years.

Faculty of Social and Health Sciences

SENIOR LECTURESHIP IN SPEECH PATHOLOGY AND THERAPEUTICS (Jordanstown)

Applications are invited from suitably qualified and experienced speech therapists for the post of Senior Lecturer in Speech Pathology and Therapeutics.

The person appointed will be expected to make a senior contribution to the development of initial and post-registration education in Speech Pathology and Therapeutics.

Candidates for the post should be graduates in Speech Therapy or a cognate area of study and must hold professional qualifications recognised by the College of Speech Therapists. It is desirable that applicants should be able to offer a teaching contribution in respect of dysfluency and/or voice disorders.

SENIOR LECTURESHIP IN NURSING (Coleraine)

LECTURESHIP IN NURSING (Coleraine)

Applications are invited from suitably qualified and experienced Nurse graduates for the posts of Lecturer and Senior Lecturer in Nursing. The Lecturer and Senior Lecturer would be expected to contribute to the development and operation of clinically orientated undergraduate and postgraduate programmes in the new department of Nursing and Health Visiting. The Senior Lecturer would be responsible to the Professor of Nursing for a major area of the department's work.

Candidates for the post should be graduates and experienced registered nurses. Teaching experience would be desirable for both posts but essential for the Senior Lecturer.

Faculty of Technology (Jordanstown)

LECTURESHIP IN ELECTRONIC ENGINEERING

Applications are invited for a lectureship in Electronic Engineering. Duties will include contributing to the teaching and laboratory development associated with postgraduate, degree, diploma, and certificate courses. In addition, participation in research, curriculum development, planning and supervision of students on industrial placement is expected.

Applicants should hold a good honours degree and should have teaching, industrial or research experience in electronic circuit and systems design.

LECTURESHIP IN MECHANICAL ENGINEERING – CONTROL SYSTEMS

Applications are invited from honours graduates with industrial or research experience in industrial automation and/or control systems.

Salary Scales:–
Senior Lecturer: £13,515–£18,825 (under review)
Lecturer: £7,190–£14,125 (under review)

Commencing salary will be determined by qualifications and experience.

Further details are available from the Staffing Officer (Designate), Proposed University of Ulster, PO Box 38, Coleraine, Co. Londonderry, BT82 1SA, to whom applications should be sent before 9th July 1984. (14672)

AUSTRALIA

Applications are invited for the following posts for which applications close on the dates shown. SALARIES (unless otherwise stated) are as follows:- Professor A$51,006; Senior Lecturer A$32,677–A$36,058; Lecturer A$24,353–A$31,994.

Further details and application procedure may be obtained from The Association of Commonwealth Universities, (Appts), 36 Gordon Square, London WC1H 0PF unless applications are invited direct to the University.

University of Melbourne

LECTURER (CONTINUING OR LIMITED TENURE) IN ECONOMETRICS

Department of Economics

Applicants for this position should have substantial academic qualifications, university teaching experience and proven research ability and competence in the area of econometrics. As well as expertise in econometrics, applicants should have sufficient background in economics to participate in teaching in areas other than econometrics.

An appointment may be made on a continuing basis or for a period of between two and five years. The successful applicant would be required to take up the appointment early in 1985.

Appointees from interstate or overseas will be eligible for assistance with travel and removal expenses. *31 July 1984*

University of Sydney

FIXED TERM LECTURER/SENIOR LECTURER IN COMPUTER SCIENCE

The Basser Department of Computer Science has a vacancy for a Lecturer/Senior Lecturer for a fixed term of 3 years. Industrial experience and/or a background or interest in computer performance or software engineering would be an advantage. Applicants should have a higher degree or equivalent qualification in Computer Science.

The Department is equipped with two VAX 11/780s, a Burroughs 1800, and several smaller mini and micro computers, including computer graphics facilities, a Puma robot and has access to the University's Cyber computer. It offers courses in Computer Science from first year to honours level, a postgraduate Diploma and MSc and PhD programmes. Appointees will be expected to teach and carry out their own research in Computer Science.

The University reserves the right not to proceed with any appointment for financial or other reasons. *6 July 1984*

University of Queensland Brisbane

PROFESSOR OF LAW

Applications are invited for the Chair of Law from those experienced scholars with a substantial research record and considerable experience of teaching at both undergraduate and postgraduate level.

There are three other chairs in the Department, occupied by Professor Tarlo (Property Law, Environmental Law, Legal Method), Professor Sutton (Contract, Commercial Law, International Trade Law) and Professor Lumb (Constitutional Law, Law of the Sea, Legal Theory).

The appointee will be expected to pursue a distinguished leadership in his/her areas of expertise and to participate in the administration of the Law School. Heads of Department are appointed for terms of three to five years. The Professor would be eligible for consideration for appointment as Head on the expiry of the term of the present incumbent, Professor Lumb. *31 August 1984*

PROFESSOR OF ORGANIC CHEMISTRY

Applications are invited for the Chair of Organic Chemistry. Applicants should be able to present evidence of substantial research achievement in the field of organic chemistry, the successful applicant will be expected to demonstrate and encourage excellence in research, and will be given responsibilities by the Head of the Chemistry Department for undergraduate and postgraduate teaching in the organic section of the Department. *31 July 1984*

SENIOR LECTURER (TENURABLE) IN PSYCHIATRY

Higher degree in psychiatry required. Candidates should have considerable clinical experience and an interest in research and preferably an established research record.

Salary: Clinical Loading of A$9,120 per annum. Level of appointment will depend on qualifications, experience and research record. *31 July 1984*

University of Bath

TEMPORARY LECTURESHIP IN PHARMACOLOGY

Applications are invited for this post in the School of Pharmacy, for the period 1st September, 1984, to 30th September, 1985.

Application forms and further particulars can be obtained from the Personnel Officer, University of Bath, Bath BA2 7AY, quoting reference number 84/55, to whom applications should be sent by 6th July, 1984. (16506)

University of New South Wales, Sydney

LECTURER IN SCHOOL OF GEOGRAPHY

Applicants should possess demonstrated expertise in model building for urban and regional analysis, preferably in the areas of spatial interaction or impact studies.

The position is available from 1 August 1984 and appointment will be for a fixed term of three years.

Further information from Professor B. J. Garner, Head of School (02) 662-3054. *1 July 1984*

Visiting Fellowship – SCHOOL OF HISTORY AND PHILOSOPHY OF SCIENCE

Applications for appointment as Visiting Fellow are invited from established scholars whose primary teaching and research interests are concerned with historical, philosophical or social studies of science, technology or medicine. the appointee will be expected to participate in the teaching and research activities of the School and will be offered a stipend, within the limits of available funding, commensurate with his or her qualifications and experience. This appointment could serve as a means of supplementary support for a scholar visiting Australia on sabbatical leave.

The duration of the appointment is open to negotiation, provided that it falls wholly within the calendar year 1985 and includes the period from mid-February to the end of June. Applicants should submit a full curriculum vitae together with the names and addresses of two referees, details of current teaching and research interests and an indication of the period for which appointment is sought to the Academic Staff Office, University of New South Wales, P.O. Box 1, Kensington, N.S.W., Australia 2033.

The Closing date for applications is *16 July 1984.*

Equality of employment opportunity is University policy.

Macquarie University Sydney

LECTURER IN SLAVONIC STUDIES IN SERBIAN

School of Modern Languages
(FIXED TERM APPOINTMENT)

In 1963 Macquarie University introduced Slavonic languages into the School of Modern Languages. Teaching in Croatian, Polish and Serbian began in 1983, and Macedonian was added in 1984, as was Ukrainian, the latter being financed by the Ukrainian Studies Foundation of Australia.

Courses in Serbian began at second-year level in 1984 and it is planned to expand into third-year courses in 1985, thus providing a full degree programme in Serbian studies. It is hoped to introduce postgraduate courses in 1986.

Applications are invited from suitably qualified persons for appointment to a fixed-term position as Lecturer in Slavonic Studies in Serbian and co-ordinator of the Serbian Studies programme, tenable not before 1 February 1985. Applicants would normally be expected to hold or be completing a higher degree in Slavonic Studies. Native competence in Serbian as well as teaching ability in a further area of Slavonic Studies would be an advantage. The successful appointee will be expected to develop and maintain cordial and co-operative relations with the Serbian community in Australia.

The person appointed will work under the direction of the Head of the School of Modern Languages and in collaboration with the Lecturer-in-charge of South Slavonic Studies. *13 July 1984.*

SENIOR LECTURER/ LECTURER IN ACCOUNTING

School of Economics and Financial Studies

The position is tenable not before 1 February 1985.

It is expected that the successful applicant will make a significant contribution to the research and teaching programmes of the Accounting and Financial Management disciplines. Interests in one or more of the following areas is desirable:

Financial Reporting
Management Accounting
Corporate Finance/Investments
Auditing
Management Information Systems

Applicants for the senior lectureship should either have completed a master's degree by research, with the plan to proceed to doctoral studies, or, have made substantial progress towards a doctoral degree. Applicants for the lectureship should at least have made substantial progress towards a higher degree by research. *13 July 1984.*

University of Exeter

SCHOOL OF ENGLISH

Applications are invited for a Lectureship in Renaissance Literature, tenable from 1 October 1984 for a period of six years at a salary of £6310 per annum (under review).

Preference will be given to candidates completing a post-graduate degree and specialising in Renaissance Literature and/or Renaissance Drama.

Further particulars available from the Personnel Office, University of Exeter, Stocker Road, Exeter EX4 4QJ, to whom applications, the names of two referees and a curriculum vitae should be sent by 13 July 1984, quoting reference no. 3385.

UNIVERSITY OF EDINBURGH
DEPARTMENT OF LINGUISTICS
(Centre for Speech Technology Research)

INFORMATION TECHNOLOGY LECTURESHIP
(Ref. ITL/4)

Applications are invited for an Information Technology Lectureship in the area of speech computing.

The person appointed may also be appointed to the Deputy Directorship of the new Centre for Speech Technology Research. The Centre conducts research and development in MMI and IKBS topics in speech and natural language processing, in collaboration with such Departments as Electrical Engineering, Artificial Intelligence and Computer Science. The successful candidate would be expected to give leadership across several projects, particularly in the Centre's major contribution to the Alvey Demonstrator in automatic speech recognition (Plessey Consortium). Participation would also be expected in the teaching of the Department's contribution to the MSc in Information Technology. A strong background in speech computing is necessary, and experience in signal processing or artificial intelligence would be an advantage.

Applications, naming two referees, should be lodged with The Secretary to the University, Old College, South Bridge, Edinburgh EH8 9YL, by 30th June, 1984.

Further information is also available from Dr J. Laver, Director, Centre for Speech Technology Research, Tel: 031-667 1011, Ext. 6580, Telex 727442 UNIED-G. Please quote Reference No. ITL/4. (16496)

LOUGHBOROUGH UNIVERSITY OF TECHNOLOGY

LECTURER IN COMPUTER STUDIES

Applications are invited for the post of LECTURER in the Department of Computer Studies. Applicants should preferably be experienced in expert systems, mathematical or graphical software design, although applicants interested in other areas of computer studies will be considered. The appointment will be made in the lower half of the lecturer scale £7,190 to £14,125 for three years in the first instance.

Further details and application form from Paul Johnson, Establishment Officer, ref 84/28 CO.

Loughborough *Leicestershire* (16498)

UNIVERSITY OF BRADFORD

LECTURESHIPS
at the Project Planning Centre for Developing Countries

The Centre runs – in Bradford and abroad – specialised post-experience courses in project planning for specific sectors for personnel from developing countries; conducts a taught M.Sc. in National Development and Project Planning; and undertakes research, advisory and institutional development assignments overseas. The Centre is particularly interested in applications from persons who can contribute in one or more of the following areas: industry; agriculture/rural; infrastructure (especially transport); General Development Economics. The persons appointed will have relevant experience of operational work overseas, and of teaching. The two posts are full-time and for a fixed period of three years. Salary on scale £7,190–£14,125 p.a.

Application forms and further particulars from the Personnel Secretary, (Ref: PPC/LST/THES), University of Bradford, West Yorkshire BD7 1DP to whom applications, including three referees, should be sent by 13th July, 1984. (14691)

LOUGHBOROUGH UNIVERSITY OF TECHNOLOGY

Academic Registrar

The University wishes to appoint a successor to the present Academic Registrar, who will be taking early retirement in September 1985. It is intended to make the appointment in a designated capacity from 1st January 1985, with the appointee initially carrying out the duties of another vacant post as well as being permitted a period of induction.

The Academic Registrar is responsible for a wide range of academic administrative services and also acts, on delegation from the Registrar, as Secretary to the Senate of the University. Substantial experience of university administration is required. The commencing salary will be within the Grade 1V range (current minimum £17,275 per annum but under review from 1 April 1984) and will be fixed in accordance with the qualifications and experience of the successful candidate.

Further particulars and application forms are available from the Registrar. Closing date 31 July 1984.

Loughborough *Leicestershire* (14470)

The University of New England Australia

Department of Accounting and Financial Management

ASSOCIATE PROFESSOR/SENIOR LECTURER

The University seeks an appointment to contribute to the academic leadership in one or more of the undergraduate fields within the Department: accounting/auditing, finance, information systems, taxation and business law. The Department actively supports research publications, conference participation and contributions to professional development by staff and details of the support and facilities available can be obtained from the Staff Officer.

A candidate at either level of appointment must demonstrate a commitment to and success in developing undergraduate programmes since such programmes are a high priority for the Department.

For appointment at Senior Lecturer level applicants must demonstrate continuing contribution to leadership and stimulation in their subject area, evidenced by publications and/or scholarly works. A demonstrated high standard of teaching ability and administrative involvement would be expected.

Applicants for appointment at Associate Professor level should demonstrate achievement in scholarship and research evidenced by publications of the highest standard – candidates should enjoy national recognition and high repute in their particular field. An Associate Professor would be expected from time to time to act as Head of Department.

Details of the University, Faculty of Economic Studies and the Department may be obtained with application procedure from the Staff Officer. Informal enquiries concerning the Department, its current activities and future directions may be directed to Professor G. G. Mandeville (067) 73 3444.

Salary: A$32677 – $38085 per annum (Senior Lecturer). A$45051 per annum (Associate Professor).

Closing date: 27 July 1984.

Position No: 494

Other conditions include superannuation, assistance with travel and removal expenses and with costs of building a house in Armidale.

Applications including the names and addresses of three referees and stating the position number should be sent to the Staff Officer, University of New England, Armidale, N.S.W. 2351, Australia, prior to the closing date. Applicants should forward a copy of this advertisement to their referees and ask them to send their reports direct to the Staff Officer, Mr. B. C. Turner, marking their envelopes "private and confidential" and quoting the position number, before the above closing date so as to expedite the appointment process. (16535) R1

Victoria University of Wellington New Zealand

TEMPORARY LECTURER IN ECONOMICS

Applications are invited from applicants for the above position but applicants will be considered who have a strong background and specialisation within the field of economics. Ability and willingness to teach introductory undergraduate courses either in economics or in economic and statistics for economists is essential but there will also be opportunities to teach more advanced courses related to the appointee's interests.

Salary in the range: NZ$18,577 to NZ$26,101 per annum.

Conditions of Appointment and particulars of service are available from the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF, or from the Administrative Assistant (Appointments), Victoria University of Wellington, Private Bag, Wellington, New Zealand, with whom applications close on 15th August 1984. (16539) R1

Southampton THE UNIVERSITY

DEPARTMENT OF COMPUTER STUDIES

Applications are invited for the post of

LECTURER

in the Department of Computer Studies. The person appointed will contribute to a flexible undergraduate teaching programme and will strengthen research activity in the general field of Software Engineering. Candidates should have at least an honours degree in, Mathematics, Science or Engineering and either a higher degree in Computer Science or appropriate industrial experience. The ideal candidate will have extensive relevant experience and an established track record in research. Being realists, we recognise that such a combination is rare, and we are prepared to settle for less. In particular, applications from young researchers of demonstrable promise will be welcomed.

The post is available from 1 September, 1984. Salary scale £7,190–£14,125 (15) per annum (under review), salary will depend on qualifications and experience. further particulars may be obtained from Mrs. E. C. P. Seery, Staffing Department, The University, Southampton, SO9 5NH, to whom applications naming three referees should be sent not later than 29th June, 1984 quoting reference 1701/A. (16473)

The University of New Zealand Australia

Department of Politics

LECTURER

Applicants qualified in any area of politics are encouraged to apply, but preference may be given to candidates with research and teaching interests in some area of comparative politics, eg. US and/or Communist politics. The successful applicant will also be required to contribute to the first year politics course.

Applicants should be able to take up the post at the start of the 1985 academic year.

Duties will include teaching on internal undergraduate and graduate students and research.

Details of the current work of the Department are available from the Staff Officer.

Salary A$24,353–$31,994 per annum.

Closing date: 30th July 1984.

Position No. 484.

The appointment will be to the permanent staff but the University reserves the right to make the appointment for a fixed term if it considers this appropriate.

Other conditions include superannuation, assistance with travel and removal expenses and with costs of building a house in Armidale.

Applications including the names and addresses of three referees and stating the position number should be sent to the Staff Officer, University of New England, Armidale, N.S.W. 2351, Australia, prior to the closing date. Applicants should forward a copy of this advertisement to their referees and ask them to send their reports direct to the Staff Officer, Mr. B. C. Turner, marking their envelopes "private and confidential" and quoting the position number, before the above closing date so as to expedite the appointment process. (16536) R1

Universities continued

Griffith University
Australia
School of Social and Industrial Administration
Computing and Information Studies

SENIOR LECTURER

The University is developing an innovative, interdisciplinary, problem-oriented undergraduate programme in Computing and Information Studies leading to the degree of Bachelor of Information. The first student intake will be admitted in 1985. Applications are invited for the position of Senior Lecturer to lead a team in the development, teaching and management of the degree programme and, equally importantly, in promoting and stimulating research in Informatics.

Applicants should have a strong background in computing, or more widely in information, relevant academic qualifications, and experience of teaching and research in those areas. Ideally the successful candidate will have a breadth of vision concerning the information sciences, together with an innovative approach to the ensuring of educational programmes. Well developed communication skills are essential. Managerial experience in an academic environment is highly desirable. Research interests in Informatics are diverse, the man/machine interface, social impact of computing, language design or software engineering methodology would be compatible with the interests of current staff.

The appointment is a continuing one, depending upon qualifications and experience, will be within the range A$39,377 to A$43,082 per annum. Benefits include superannuation and assistance with housing. Costs of fares and reasonable removal expenses will be met for appointee from outside Brisbane.

Intending applicants should first contact the School Administrator, School of Social and Industrial Administration, Griffith University, Nathan, Qld. 4111, Australia, or the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF, regarding the form of application.

The closing date for applications is 31 July 1984. H1

Griffith University
Australia
School of Australian Environmental Studies

LECTURER (COMPUTING – ENVIRONMENTAL STUDIES)

Applicants will be expected to contribute to teaching role in the teaching of computing and its applications; and also to teach to quantitative modelling and simulation. They should have a demonstrated capacity for research; a qualification in computing; skills in mathematics especially in quantitative modelling; experience in applying computing to an aspect of environmental studies relevant to the School's emphases; and a willingness to work in an interdisciplinary environment. A PhD degree is desirable.

This position is offered initially as a three-year continuing appointment. Subject to satisfactory performance an offer of continuing appointment (tenure) will be made at the end of the three-year period.

The successful applicant will be required to take up duty in January 1985, or as soon as possible thereafter. Salary will be within the range A$24,553 to A$31,094 per annum.

Further particulars and method of application available from the Secretary to the Griffith Appointments Committee, School of Australian Environmental Studies, Griffith University, Nathan, Qld. 4111, Australia or from the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF.

Closing date for receipt of applications is 31 July 1984. H1

University of Exeter
Department of History & Archaeology

TEMPORARY LECTURER

Applications are invited from specialists working in medieval or early modern history (400–1600) for the above post, tenable for one year from 1 October, 1984.

Salary will be within the range £7,190 – £8,550 p.a. or the scale £7,190 – £14,185 p.a. (under review).

Further particulars from the Staff Appointments Officer, University of Exeter, Devon EX4 4QJ, to whom applications (six copies, candidates overseas one copy) should be sent by 6 July, 1984. Please quote reference No. 3384.

Applicants for the tutorship recently advertised will be automatically considered for the lectureship and need not make a separate application. (10730) H1

Griffith University
Australia
School of Australian Environmental Studies

LECTURER (COMPUTING – ENVIRONMENTAL STUDIES)

Applicants will be expected to contribute to teaching role in the teaching of computing and its applications; and also to teach to quantitative modelling and simulation. They should have a demonstrated capacity for research; a qualification in computing; skills in mathematics especially in quantitative modelling; experience in applying computing to an aspect of environmental studies relevant to the School's emphases; and a willingness to work in an interdisciplinary environment. A PhD degree is desirable.

This position is offered initially as a three-year continuing appointment. Subject to satisfactory performance an offer of continuing appointment (tenure) will be made at the end of the three-year period.

The successful applicant will be required to take up duty in January 1985, or as soon as possible thereafter. Salary will be within the range A$24,553 to A$31,094 per annum.

Further particulars and method of application available from the Secretary to the Griffith Appointments Committee, School of Australian Environmental Studies, Griffith University, Nathan, Qld. 4111, Australia or from the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF.

Closing date for receipt of applications is 31 July 1984. H1

University of Bradford
Modern Languages Centre

LECTURESHIP IN FRENCH STUDIES

Applications are invited for a lectureship in French Studies to commence 1 October, 1984 or as soon thereafter as possible. Candidates should be qualified to teach French language at all levels within a degree course with emphasis on oral/aural skills and the awareness of register and socio-linguistic variation. Knowledge of Contemporary French Society; the analysis of literary texts; research in modern French. Salary on the scale £7,190 – £14,185 p.a. (under review).

Application forms and further particulars may be obtained from the Personnel Secretary (Ref. MF/A 257/H), University of Bradford, Bradford, Yorkshire BD7 1DP. Closing date a.s.a.p. (63503) H1

King's College, Cambridge

LECTURESHIP IN ENGLISH

Applications are invited from men and women for appointment to a College Lectureship from October. The appointment will carry a Fellowship and is normally for a period of up to five years. Applicants should be prepared to teach in Medieval and Renaissance literature including Shakespeare. It is hoped that the person appointed can take up the Fellowship at the earliest in January, 1985 or at the latest in October, 1985.

Further particulars may be obtained from the Senior Tutor, King's College, Cambridge CB2 1ST, to whom applications should be sent not later than 1st September 1984. H1

University of Bristol
School of Education

LECTURER IN EDUCATION

Applications are invited for the above post, the appointment to commence on 1st January, 1985 or such other date as may be agreed.

Applicants should be qualified to teach at least one curriculum subject, have experience in the development of the Curriculum and its evaluation, in Primary Education, and preferably should also be able to participate in the teaching Psychology and/or Sociology of Education with special reference to primary schools.

The successful applicant will be required to undertake research leading to the degree of Ph.D. or equivalent. Knowledge of SMDP is desirable.

Salary: Lecturer Grade 1 – £10,850 per annum plus gratuity. Lecturer Grade A – £12,670 per annum plus gratuity.

Other conditions: The successful applicant will be offered a contract for a three year appointment. The gratuity entitlement is based on 24% of salary earned and is payable in instalments or in one sum and is taxed at a flat rate of 25%. In addition to the salaries quoted above, the main benefits include: restriction airfares for appointee and dependants; financial assistance towards the cost of transporting personal effects to and from the UK; two weeks annual recreation leave with home airfares paid to visit each 18 months of continuous service; generous educational subsidies for children attending school in the UK; pensions: a salary continuation scheme to cover extended illness or disability.

Applications, which will be treated as strictly confidential and should include the names, addresses, and telephone numbers of two referees, a recent small photograph and a stamped self-addressed envelope for acknowledgement, should be forwarded to the Deputy Registrar (Staffing), University of Papua New Guinea, Box 320, University, Papua New Guinea, to reach him no later than 13 July, 1984. Candidates in the UK should also send a copy of the application to the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF. H1 (53308)

University of Surrey
Department of Mechanical Engineering

RESEARCH FELLOW

A Research Fellow with postgraduate training and research experience in experimental fluid mechanics is sought for an SERC contract entitled "Eddy Structures in Separated Flows". The successful candidate will join an active team of research workers working in the general field of environmental aerodynamics and complex turbulent flows.

Initial salary will be up to a maximum of £6,675 per annum according to age, qualifications and experience. Fifth superannuation scheme. USS conditions. The post will be available from 1 October for three years.

Applications in the form of a curriculum vitae (3 copies) including the names and addresses of referees should be sent to The Personal Secretary (Personnel), University of Surrey, Guildford, Surrey, GU2 5XH by 13 July, 1984 quoting reference 57/84. Further information can be obtained from Dr. Castro on Guildford 571281, Ext. 782. (53567) H1

University of Manchester

CHIEF ENGINEER

Applications are invited for a new senior post of Chief Engineer within the University's Department of Estates and Services. Candidates should have professional qualifications in Mechanical or Electrical or Civil Engineering or in another relevant field and should have gained several years experience in a position of responsibility. The person appointed will report to the Director of Estates and Services. The salary will be within the range for Administrative Staff Grade IV (maximum £17,275 p.a. under review).

Further particulars are obtainable from The Registrar, The University, Manchester M13 9PL to whom applications should be sent by 23rd July.

Please quote reference 145/84/TIMES. (10731) H1

University of St Andrews
Department of Modern History

Applications are invited for a

TEMPORARY LECTURESHIP

in 20th century British history, tenable for three years from October 1984.

Starting salary within range £7,190 to £8,550 per annum (under review) plus USS.

Further particulars may be obtained from the Establishments Officer, The University, College Gate, St Andrews, Fife KY16 9AJ, to whom applications (two copies, overseas one copy) should be sent by 1 August 1984 (preferably with curriculum vitae and the names of two referees). Please quote reference number 1/84. (10732) H1

University of Papua New Guinea
Port Moresby
Education Research Unit Department

LECTURER RESEARCH

(P.191003/84)

Applications are invited from suitably qualified persons for the post of Lecturer ERU. The Chair is one of three established in the Department of Economics. The person appointed will be expected to play a leading role in research and in developing and co-ordinating the teaching of Economics. The department is anxious to strengthen its work in macroeconomics but would also welcome applications from candidates with experience in other fields.

Salary will be in the professorial range.

Further particulars may be obtained from the Deputy Registrar, The University, Newcastle upon Tyne, NE1 7RU with whom applications (18 copies) giving the names of three referees, should be lodged by not later than 13th July, 1984. (Applicants from outside the UK should submit one copy only). (10727) H1

University of Bradford
Modern Languages Centre

LECTURESHIP IN FRENCH STUDIES

Applications are invited for a lectureship in French Studies to commence 1 October, 1984 or as soon thereafter as possible. Candidates should be qualified to teach French language at all levels within a degree course with emphasis on oral/aural skills and the awareness of register and socio-linguistic variation. Knowledge of Contemporary French Society; the analysis of literary texts; research in modern French. Salary on the scale £7,190 – £14,185 p.a. (under review).

Application forms and further particulars may be obtained from the Personnel Secretary (Ref. MF/A 257/H), University of Bradford, Bradford, Yorkshire BD7 1DP. Closing date a.s.a.p. (63503) H1

King's College, Cambridge

LECTURESHIP IN ENGLISH

Applications are invited from men and women for appointment to a College Lectureship from October. The appointment will carry a Fellowship and is normally for a period of up to five years. Applicants should be prepared to teach in Medieval and Renaissance literature including Shakespeare. It is hoped that the person appointed can take up the Fellowship at the earliest in January, 1985 or at the latest in October, 1985.

Further particulars may be obtained from the Senior Tutor, King's College, Cambridge CB2 1ST, to whom applications should be sent not later than 1st September 1984. H1

University of Bristol
School of Education

LECTURER IN EDUCATION

Applications are invited for the above post, the appointment to commence on 1st January, 1985 or such other date as may be agreed.

Applicants should be qualified to teach at least one curriculum subject, have experience in the development of the Curriculum and its evaluation, in Primary Education, and preferably should also be able to participate in the teaching Psychology and/or Sociology of Education with special reference to primary schools.

The successful applicant will be required to undertake research leading to the degree of Ph.D. or equivalent. Knowledge of SMDP is desirable.

Salary: Lecturer Grade 1 – £10,850 per annum plus gratuity. Lecturer Grade A – £12,670 per annum plus gratuity.

Other conditions: The successful applicant will be offered a contract for a three year appointment. The gratuity entitlement is based on 24% of salary earned and is payable in instalments or in one sum and is taxed at a flat rate of 25%. In addition to the salaries quoted above, the main benefits include: restriction airfares for appointee and dependants; financial assistance towards the cost of transporting personal effects to and from the UK; two weeks annual recreation leave with home airfares paid to visit each 18 months of continuous service; generous educational subsidies for children attending school in the UK; pensions: a salary continuation scheme to cover extended illness or disability.

Applications, which will be treated as strictly confidential and should include the names, addresses and telephone numbers of two referees, a recent small photograph and a stamped self-addressed envelope for acknowledgement, should be forwarded to the Deputy Registrar (Staffing), University of Papua New Guinea, Box 320, University, Papua New Guinea, to reach him no later than 13 July, 1984. Candidates in the UK should also send a copy of the application to the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF. H1 (53308)

University of Surrey
Department of Mechanical Engineering

RESEARCH FELLOW

A Research Fellow with postgraduate training and research experience in experimental fluid mechanics is sought for an SERC contract entitled "Eddy Structures in Separated Flows". The successful candidate will join an active team of research workers working in the general field of environmental aerodynamics and complex turbulent flows.

Initial salary will be up to a maximum of £6,675 per annum according to age, qualifications and experience. Fifth superannuation scheme. USS conditions. The post will be available from 1 October for three years.

Applications in the form of a curriculum vitae (3 copies) including the names and addresses of referees should be sent to The Personal Secretary (Personnel), University of Surrey, Guildford, Surrey, GU2 5XH by 13 July, 1984 quoting reference 57/84. Further information can be obtained from Dr. Castro on Guildford 571281, Ext. 782. (53567) H1

University of Manchester

CHIEF ENGINEER

Applications are invited for a new senior post of Chief Engineer within the University's Department of Estates and Services. Candidates should have professional qualifications in Mechanical or Electrical or Civil Engineering or in another relevant field and should have gained several years experience in a position of responsibility. The person appointed will report to the Director of Estates and Services. The salary will be within the range for Administrative Staff Grade IV (maximum £17,275 p.a. under review).

Further particulars are obtainable from The Registrar, The University, Manchester M13 9PL to whom applications should be sent by 23rd July.

Please quote reference 145/84/TIMES. (10731) H1

University of St Andrews
Department of Modern History

Applications are invited for a

TEMPORARY LECTURESHIP

in 20th century British history, tenable for three years from October 1984.

Starting salary within range £7,190 to £8,550 per annum (under review) plus USS.

Further particulars may be obtained from the Establishments Officer, The University, College Gate, St Andrews, Fife KY16 9AJ, to whom applications (two copies, overseas one copy) should be sent by 1 August 1984 (preferably with curriculum vitae and the names of two referees). Please quote reference number 1/84. (10732) H1

Brunel University
Department of Design and Technology

LECTURESHIP IN DESIGN AND TECHNOLOGY

Applications are invited for a lectureship in Design and Technology with interests in promoting craft, design and technology to potential teachers in schools and to undergraduates of industrial design. Candidates should be qualified in electrical or mechanical engineering or craft design and technology and have developed some expertise in computing, materials science or industrial design. Research activity will be expected.

The successful candidate will work substantially at the Cooper's Hill Campus, Egham.

Salary within the Lecturer scale £7,190 – £14,185 per annum (under review) plus £1,166 per annum London Allowance, with USS benefits.

Please send a self-addressed envelope to the Personnel Secretary, Brunel University, Uxbridge, Middlesex UB8 3PH, to obtain an application form to be returned by 13th July. Overseas applicants are asked to make a telex application.

Application forms and further particulars are available from the Assistant Registrar, King's College London, Strand, London WC2R 2LS. Tel: 01-836 8454, Ext. 2688. Applications and nominations submitted in duplicate with names of three referees as soon as possible, and not later than 16th July 1984. (10718) H1

University of St Andrews
Department of Chemistry

TEMPORARY LECTURESHIP IN INORGANIC CHEMISTRY

Applications are invited for a temporary lectureship in Inorganic Chemistry, tenable for one year from 1st September 1984. The lecturer will be required to give lecturecourses at undergraduate and honours level in the undergraduate course, to take laboratory classes, and to undertake research in collaboration with an existing research group. Applications will be particularly welcomed from candidates having research experience in Organometallic chemistry.

Salary within the range £7,190 to £8,550 per annum (under review) on the lecturer's scale, with USS benefits.

Further particulars of this post may be obtained from the Secretary to the Chemistry Department, Professor P.L. Pauson.

Applications (two copies preferably in typescript) with the names of three referees should be sent to the Establishments Officer, The University, College Gate, St Andrews, Fife KY16 9AJ, to whom applications (two copies, overseas one copy) should be sent not later than 1st July 1984. (10733) H1

King's College London(KQC)
Department of Biblical Studies

LECTURESHIP IN NEW TESTAMENT STUDIES

Applications are invited for the above Lectureship, tenable from 1st October 1984 or as soon as possible thereafter.

Salary on the scale £7,190 to £14,185 per annum plus £1,166 per annum London Allowance. It is likely that the appointment will be made at the lower half of the scale.) USS would be payable.

Candidates for the recently-advertised "new blood" post in Christian Origins and Early Judaism who would also like to be considered for the Lectureship are asked to make a fresh application.

Application forms and further particulars are available from the Assistant Registrar, King's College London, Strand, London WC2R 2LS. Tel: 01-836 8454, Ext. 2688. Applications and nominations submitted in duplicate with names of three referees as soon as possible, and not later than 16th July 1984. (10718) H1

University of St Andrews
Department of Chemistry

TEMPORARY LECTURESHIP IN INORGANIC CHEMISTRY

Applications are invited for a temporary lectureship in Inorganic Chemistry, tenable for one year from 1st September 1984. The lecturer will be required to give lecturecourses at undergraduate and honours level in the undergraduate course, to take laboratory classes, and to undertake research in collaboration with an existing research group. Applications will be particularly welcomed from candidates having research experience in Organometallic chemistry.

Salary within the range £7,190 to £8,550 per annum (under review) on the lecturer's scale, with USS benefits.

Further particulars of this post may be obtained from the Secretary to the Chemistry Department, Professor P.L. Pauson.

Applications (two copies preferably in typescript) with the names of three referees should be sent to the Establishments Officer, The University, College Gate, St Andrews, Fife KY16 9AJ, to whom applications (two copies, overseas one copy) should be sent not later than 1st July 1984. (10733) H1

University of Canterbury
New Zealand

LECTURER IN SOCIOLOGY

Applications are invited for the above from suitably qualified applicants from any field within Sociology, however those with a special interest in the Sociology of Deviance and/or Work and Technology may be given preference.

The person appointed will be expected to contribute to the core courses within the Sociology programme and to develop a special interest area.

The salary for Lecturers in on a scale from NZ$21,660 to $25,584 per annum.

Further particulars and Conditions of Appointment may be obtained from the Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF.

Applications close with the Registrar, University of Canterbury, Private Bag, Christchurch, New Zealand, on 14th September 1984. (53536) H1

The Papua New Guinea University of Technology

MATHESON LIBRARY – CHIEF CATALOGUER

Applications are invited for the post of Chief Cataloguer in the Matheson Library. The Library serves 3,000 students, approximately 150 academic staff and numerous external users. It contains 60,000 volumes and is growing at the rate of 10,000 volumes a year.

The successful applicant will be responsible to the University Librarian for the organisation and administration of the cataloguing section and the supervision of the Papua New Guinea professional and para-professional cataloguing staff.

Applicants should hold a degree as an internationally recognised professional qualification in librarianship. A higher degree in librarianship will be preferred. Considerable professional experience with automated cataloguing systems in academic libraries is essential.

Salary: Senior Librarian K40,580 (K1 = Stg 0.6118 approx.).

Date of commencement: December 1984.

Initial contract period is for 3 years. Benefits include a gratuity of 24%, 6% superannuation and repatriation fares, recreation leave fares for staff member and family after 6 months of service, settling-in and attitudinal allowances, six weeks paid leave per year, education fares and assistance towards school fees, free housing. Relocation plan and medical benefit schemes are available.

Further information is available from the University Librarian, Mr S. A. Patchett, in the University.

Detailed applications (two copies) giving the names of three referees, together with the names and addresses of referees, should be received by 13th July 1984. Applications resident in the United Kingdom should also send one copy to Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF, from whom further general information may be obtained. (53537) H1

The University of Aston in Birmingham
Management Centre

Applications are invited for the following lectureships:-

LECTURER IN INFORMATION SYSTEMS

(612/156)

The successful candidate will be expected to have a strong interest in management information systems and computer systems supported by some formal training in this field together with relevant experience with computers. Required qualifications are a good honours degree, preferably in subject relevant to management and/or computing, and a research degree would be an advantage. Evidence of research ability will also be required.

LECTURER IN INDUSTRIAL RELATIONS

(613/156)

The successful candidate will be expected to have a proven commitment to teaching and research. Required qualifications are a good first degree in the social sciences (including economics) together with a higher degree with a substantial industrial relations content.

The appointments will be for a period of three years initially, with the possibility of renewal for subsequent transfer to a continuing appointment. The salary will be within the range £7,190 to £14,185 per annum.

Application forms and further particulars may be obtained from the Staff Officer (quoting the appropriate reference number), University of Aston in Birmingham, Gosta Green, Birmingham B4 7ET, to whom applications (two copies) should be sent not later than 14 July 1984. Closing date for acknowledgement of receipt of applications 20 July 1984. (10734) H1

University of Auckland
New Zealand

POSTDOCTORAL FELLOWSHIPS

Applications are invited for Postdoctoral Fellowships to commence during 1985. Applications in all research fields (including the humanities and social sciences) will be welcomed but preference will be given to those in the following areas – biotechnology, genetic science, microelectronics and computer science, including fields of economic importance to New Zealand such as tourism.

The Fellowships are available for either one or two years, and are valued at NZ$18,540 per annum. Conditions of appointment are set out in the Application Forms which may be obtained from the Assistant Registrar (Academic Appointments), University of Auckland, Private Bag, Auckland, New Zealand, or from the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF. Applicants should be forwarded to the University as soon as possible but not later than 31st July 1984. (53541) H1

Massey University
Palmerston North, New Zealand
Department of Animal Science

POSTDOCTORAL RESEARCH FELLOWSHIP IN PIG NUTRITION

Applications are invited for the above position funded by the New Zealand Pig Industry Board to work on an applied aspect of pig nutrition. Research experience in pig nutrition is essential and a particular interest in the nutrition of the young growing pig desirable.

The appointment is available from the beginning of 1985 or soon after and will be for an initial period of one year. Remuneration is at the NZ$23,660 per annum inclusive of superannuation, up to NZ$3,000 for fares.

Further details of the University, together with conditions of appointment, may be obtained from the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF. H1 (53308)

The University of the West Indies
St. Augustine, Trinidad W.I.

Applications are invited for the following vacancies:

Library:

Librarian II

(Senior Lecturer level) is to be responsible for Resource Management and Control. Applications are invited from librarians with a good first degree in science and professional qualifications in library/information science and with relevant experience required.

Agricultural Economics and Farm Management:

Lecturer/Assistant Lecturer

preferably with Ph.D. in Agricultural Economics.

Chemical Engineering:

Lecturer/Assistant Lecturer

in Food Technology with first degree or equivalent in Food Science, Food Technology or Microbiology and postgraduate qualifications, preferably Ph.D. in Food Microbiology.

Civil Engineering:

Senior Lecturer/ Lecturer

with specialist knowledge of Soil Mechanics and Foundations. Professional experience essential.

Government:

Lecturer/Assistant Lecturer

qualified to teach introductory Courses in Public Administration and Comparative Politics of the developing areas.

Salary Scales per annum (£ at Trs$4.5668 = £1.0): Librarian II/Senior Lecturer TT$69,180 x 1,908 – 86,388 (Bar) x 1,908 – 90,168; Lecturer TT$54,708 x 1,488 – 69,156 (Bar) x 1,908 – 77,064; Assistant Lecturer TT$45,480 x 1,368 – 49,296. F.S.S.U. Unfurnished apartments at 10% rendation if available after furnished at 12½% rental value. Passages for one of persons and baggage on first appointment. Up to five full days' leave for interview. Application and nomination forms may be obtained from the Registrar, The University of the West Indies, St. Augustine, Trinidad, W.I. Details of post sent to applicants, but also obtainable from the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF. (53537) H1

The University of Aston in Birmingham
Management Centre

Applications are invited for the following lectureships:-

LECTURER IN INFORMATION SYSTEMS

(612/156)

The successful candidate will be expected to have a strong interest in management information systems and computer systems supported by some formal training in this field together with relevant experience with computers. Required qualifications are a good honours degree, preferably in subject relevant to management and/or computing, and a research degree would be an advantage. Evidence of research ability will also be required.

LECTURER IN INDUSTRIAL RELATIONS

(613/156)

The successful candidate will be expected to have a proven commitment to teaching and research. Required qualifications are a good first degree in the social sciences (including economics) together with a higher degree with a substantial industrial relations content.

The appointments will be for a period of three years initially, with the possibility of renewal for subsequent transfer to a continuing appointment. The salary will be within the range £7,190 to £14,185 per annum.

Application forms and further particulars may be obtained from the Staff Officer (quoting the appropriate reference number), University of Aston in Birmingham, Gosta Green, Birmingham B4 7ET, to whom applications (two copies) should be sent not later than 14 July 1984. Closing date for acknowledgement of receipt of applications 20 July 1984. (10734) H1

Victoria University of Wellington
New Zealand

LECTURER IN EDUCATION

Applications are invited for a position, which is normally a lecturer in Educational Psychology. Applicants should be qualified to teach courses in Human Learning and Curriculum Studies, particularly the second, and have experience in one of the following areas: Knowledge of the psychological basis of curriculum studies, particularly in relation to the teaching of basic skills, or Special Education. Applications for a half-time position in these fields will be considered.

Salary in the range NZ$22,077–NZ$28,101 per annum.

Conditions of Appointment and method of application available from the Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF, or from the Administrative Assistant (Appointments), Victoria University of Wellington, New Zealand, with whom applications close on 17th August 1984. (53538) H1

Salary per annum (under review) $20,451–$31,006 (salary subject to review)

Information: statements setting out the conditions of appointment and providing details about the University and, in particular, the Department of Law are obtainable from the Registrar, The University. Any further information about conditions of appointment or about the duties may be sought from the Registrar.

It is University policy to encourage women to apply for appointment to tenurable academic positions.

Holders of full-time tenured or tenurable academic appointments have the opportunity to work for Master's or higher degrees in a flexible part-time basis for a specific period of up to two years where this is necessary for the care of children.

Applications, in duplicate, quoting reference number and giving full personal particulars (including residential) status, details of academic qualifications and names and addresses of three referees should reach the Registrar of the University of Auckland, GPO Box 92, Auckland, New Zealand (Telex: UNIVAUK NZ 21411), not later than 15 September 1984.

The University reserves the right not to make an appointment or to appoint by invitation. (53530) H1

University of Reading
Department of Economics

Applications are invited for a 3 year fixed term

LECTURESHIP

from 1 September, 1984. Candidates should have interests in the area of Regional Economics. Further particulars and application form to Mrs L. Vivian, Personnel Section, The University, Reading, RG6 2AH (0734) 875123, ext. 26. Please quote Ref. No. 84/16. Closing date 19 July, 1984. (53554) H1

The University of Lancaster
Department of Educational Research

LECTURESHIP IN SPECIAL EDUCATIONAL NEEDS

Applications are invited for a temporary lectureship in Special Education, tenable from 1 January 1985. The successful candidate will develop courses for undergraduate and postgraduate students, supervise existing courses in special educational needs, and contribute to research activities. Applications giving qualifications and experience and naming three (3) referees should be sent to the University Secretary, The Castle, St. Augustine, West Indies, W.I. Details of post sent to applicants, but also obtainable from the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF. (53531) H1

University of St Andrews
Department of Modern History

TEMPORARY LECTURESHIP IN POLITICS

Applications are invited for a temporary Lectureship in Politics, tenable for three years from 1 October 1984. Applications will be welcomed from any area of International Relations, but preference will be given to candidates who can also offer specialities in either Political Theory or Aspects of North-South relations.

Starting salary on appointment within range £7,190 to £8,550 per annum, (under review), plus USS.

Further particulars may be obtained from the Establishments Officer, The University, College Gate, St Andrews, Fife KY16 9AJ, to whom applications (two copies, overseas one copy) should be sent by 1 August 1984 (preferably with curriculum vitae and the names of two referees). Please quote reference number 2/84. (10735) H1

The University of Leeds
Department of Ceramics

LECTURER

Applications are invited for the above post allocated under the UGC's New Blood Scheme and available from 1st October 1984. The area of research to be developed within the post is that of the preparation of powders suitable for the fabrication of high grade technical ceramics.

Qualifications and interests in one or other of the areas of materials science, solid state chemistry, colloid science, or preparative chemistry required.

The age limit for these posts is normally 35.

Salary on the academic scale for Lecturers £7,190–£14,185) (under review) according to age, qualifications and experience.

Informal enquiries may be made to Professor J. Brook (Leeds 431751, Ext. 474).

Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference No. 62/12. Closing date for applications 29th June 1984. (53554) H1

University of Birmingham
Department of Medieval History

RESEARCH FELLOW

Applications are invited for a Research Fellowship for one year to undertake a project on wage labour in the later middle ages under the supervision of Dr Christopher Dyer. The project, a study of the history of Prices and Incomes, Candidates should have a good experience in medieval history, preferably in the fields of social and economic history.

Salary on the scale: £7190–8530.

Applications (six copies) naming three referees, by 11 July 1984 to Assistant Registrar (Staff), University of Birmingham, P.O. Box 363, Birmingham, B15 2TT, from whom further particulars may be obtained. H1

The University of Sussex

TEMPORARY LECTURER IN ENGLISH

in the School of Cultural and Community Studies, for two years from 1st October 1984. Applications are invited from qualified men and women specialising in literatures of feminism, women's writing and/or psychoanalysis.

Salary at a low point on the Lecturer scale £7,190–£14,185 per annum.

Send self-addressed envelope (6" x 9") for further particulars and an application form to Mrs L. Vivian, Personnel Section, The University of Sussex, Falmer, Brighton BN1 9QN, Sussex. Applications should be submitted not later than Friday 6th July 1984. (53554) H1

University College of North Wales
Coleg Prifysgol Gogledd Cymru, Bangor

TEMPORARY LECTURESHIP IN FRENCH

Applications are invited for the above appointment, which will carry a Fellowship and commencing 1st October, 1984.

Candidates should have a good general command of French language and literature, and a special interest in the sixteenth century would be an advantage.

Salary range: £7,190 – £8,550 on the Lecturer's Scale (under review).

Applications (two copies), giving details of qualifications and experience, together with the names and addresses of three referees, should be sent to Mrs. M. E. Macdonald, Administrative Assistant, University College of North Wales, Bangor, Gwynedd, LL57 2DG.

Closing date for applications: 30th July, 1984. (10789) H1

University of Birmingham
Faculty of Arts

CHAIR AND HEADSHIP

of the Department of Physical Education and Sports Science

Applications are invited for the Chair and Headship of the Department of Physical Education and Sports Science which is now vacant. Applicants should have active academic interests in at least one of the Department's areas of study (Biomechanics and Exercise Physiology) and be willing to strengthen or establish links with other departments.

Salary is the professorial range, plus superannuation.

Further particulars available from the Vice-Chancellor, University, P.O. Box 363, Birmingham, B15 2TT, to whom applications (10 copies) or from overseas applicants should be sent by 1st September, 1984. (10736) H1

The University of Leeds
Department of Ceramics

LECTURER

Applications are invited for the above post allocated under the UGC's New Blood Scheme and available from 1st October 1984. The area of research to be developed within the post is that of the preparation of powders suitable for the fabrication of high grade technical ceramics.

Qualifications and interests in one or other of the areas of materials science, solid state chemistry, colloid science, or preparative chemistry required.

The age limit for these posts is normally 35.

Salary on the academic scale for Lecturers £7,190–£14,185) (under review) according to age, qualifications and experience.

Informal enquiries may be made to Professor J. Brook (Leeds 431751, Ext. 474).

Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference No. 62/12. Closing date for applications 29th June 1984. (53554) H1

University of Bristol
Department of Extra-Mural Studies

STAFF TUTORSHIP IN LEGAL STUDIES

The University proposes to appoint a Staff Tutor in Legal Studies within the Department of Extra-Mural Studies and invites applications from persons with good academic qualifications in the law and preferably with professional experience.

The post carries the salary and status of University Lecturer. The present salary is £7,190–£14,185 (under review).

Applications (with the names of three referees) should be sent not later than 10th August, 1984 to the Registrar and Secretary, University of Bristol, Senate House, Bristol BS8 1TH, from whom further particulars may be obtained. H1 (10788)

University of Oxford

DIRECTOR OF THE ASHMOLEAN MUSEUM OF ART AND ARCHAEOLOGY

Applications are invited for appointment to the Directorship of the Ashmolean Museum which will fall vacant on 30 September 1985 on the retirement of Sir David Piper.

The stipend of the director of £21,635 per annum, subject to review from 1 April 1984.

Further particulars may be obtained from the Deputy Registrar (Administration), University Offices, Wellington Square, Oxford OX1 2JD, by whom applications (two copies) naming three referees should be received by 1 October 1984.

University of Liverpool
Department of French

Applications are invited for the post of Temporary Lecturer for one year from 1st October, 1984.

Salary will be within the range £7,190–£8,550 per annum.

Applications, together with the names of two referees, should be received not later than 11th July, 1984, by the Registrar, The University, PO Box 147, Liverpool L69 3BX from whom further particulars may be obtained. Quote ref: AS/7344/THEB. H1 (53557)

European Business School

PART-TIME LECTURERS IN GERMAN/FRENCH commencing September 1984

Applications are invited for part-time lectureships on the integrated EBS business and language course for undergraduates.

Good academic qualifications, fluency in French or German and sound teaching experience are required. In addition, formal training in language teaching and experience/knowledge of the economic and business world are highly desirable.

Please write with full CV and the names of two referees to Dr Nicholas Bowen, European Business School, The City University, Northampton Square, London EC1V 0HB. Tel: 01-837 6234. (53561) H1

University of Bristol
Department of Extra-Mural Studies

STAFF TUTORSHIP IN LEGAL STUDIES

The University proposes to appoint a Staff Tutor in Legal Studies within the Department of Extra-Mural Studies and invites applications from persons with good academic qualifications in the law and preferably with professional experience.

The post carries the salary and status of University Lecturer. The present salary is £7,190–£14,185 (under review).

Applications (with the names of three referees) should be sent not later than 10th August, 1984 to the Registrar and Secretary, University of Bristol, Senate House, Bristol BS8 1TH, from whom further particulars may be obtained. H1 (10788)

University of Oxford

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Further particulars may be obtained from the Deputy Registrar (Administration), University Offices, Wellington Square, Oxford OX1 2JD, by whom applications (two copies) naming three referees should be received by 1 October 1984.

University of Liverpool
Department of French

Applications are invited for the post of Temporary Lecturer for one year from 1st October, 1984.

Salary will be within the range £7,190–£8,550 per annum.

Applications, together with the names of two referees, should be received not later than 11th July, 1984, by the Registrar, The University, PO Box 147, Liverpool L69 3BX from whom further particulars may be obtained. Quote ref: AS/7344/THEB. H1 (53557)

HONG KONG BAPTIST COLLEGE

Applications are invited for the following posts tenable from September 1984:

1. SENIOR LECTURER/LECTURE IN ECONOMICS

Applicants should have a good honours degree in Economics, preferably a Master's or Ph.D. degree and substantial teaching or research experience. Areas of speciality include a combination of Money and Banking, International Finance, Foreign Exchange, Economic Development, and Managerial Economics.

2. LECTURER IN SECRETARIAL MANAGEMENT

Applicants should have a good honours degree preferably a Master's degree in Business Education or Business Administration with some years of teaching experience. Duties include teaching of secretarial subjects: Business Communications, Gregg Shorthand, Typewriting, and Office Administration.

3. LECTURER IN MATHEMATICS

Applicants should have a Master's or higher degree in Mathematics or related discipline with experience in using statistical packages such as SPSS/STATPACK. Knowledge of computing and PASCAL programming language would be an advantage. Duties include teaching of statistics/operations research subjects and assisting in programme development.

4. SENIOR LECTURER/LECTURER IN APPLIED MATHEMATICS

This person will be expected to provide leadership in the development of a mathematical modelling and simulation element contained within the mathematics course. Experience in modelling, simulation, and computing are essential. Research activities in these areas will also be expected.

5. SENIOR LECTURER/LECTURER IN APPLIED EXPERIMENTAL PHYSICS

The successful applicant will be expected to develop and teach subjects in the areas of industrial physics and instrumentation that involve strong elements of electronics and microprocessors. The appointee will be expected to carry on research in related areas.

*6. SENIOR LECTURER/LECTURER IN INTERDISCIPLINARY PHYSICAL SCIENCE

This post will be filled by a person expected to develop and teach subjects in the interdisciplinary area of Industrial Physical Science, such as: applied material science and solid state science. He will be expected to carry on research in related areas.

*Suitable candidates for Posts 5 & 6 may be appointed as Head of Department. Applicants should indicate whether they would like to be considered for the Headship.

7. HEAD OF PHYSICS DEPARTMENT

Applicants should have a strong basic physics training and further experience in applied Physics and/or Industrial Research. Duties will include teaching and engaging in research work and departmental administrative work.

8. ASSISTANT LIBRARIAN

Applicants should have a recognized University degree plus a professional qualification in librarianship (M.

Polytechnics continued

RGIT

Robert Gordon's Institute of Technology, Aberdeen
RESEARCH STUDENTSHIPS

BUSINESS SCHOOL

(a) To work on the development of an economic model of the Grampian region. Candidates should possess a good honours degree in economics or other suitable subject. They should also have a background in applied quantitative techniques and computing.

(b) Industrial Relations—to investigate the scope location and collective bargaining in large scale establishments in N E Scotland. The research will be complementary to work already carried out in the Business School on managerial attitudes to collective bargaining. The field work will be essentially at the level of middle and upper management and the person appointed must have the social skill necessary to operate at this level. Applicants must have a good honours degree, preferably in economic history, political science, economics or history.

GRAY'S SCHOOL OF ART

The Design Department conducts CNAA Honours Degree and Degree courses in the following fields of study: Ceramics, Graphic Design, Jewellery and Textiles & Surface Decoration.
Applications are invited for a Research Studentship, to commence as soon as possible, in Computer Aided Design, with general reference to one or more of the above specialisms.

SCHOOL OF SURVEYING

Good honours graduate, in any appropriate discipline, required for research leading to MPhil or PhD Degree (CNAA) in one of the following projects relating to the built environment:
Condensation and Mould Growth
Ventilation of Domestic Buildings
Thermal Performance of Building Fabric
Renewable Energy
Standard SED research studentship grant.

SCHOOL OF MATHEMATICAL SCIENCES AND COMPUTER STUDIES

Applications are invited for Research Studentships (full-time and part-time) commencing as soon as possible in the following areas:—
1. Statistical/Mathematical/Computer Models in Medical Research.
2. Computer-aided design of control systems.
3. Database Systems and Artificial Intelligence.
4. Pharmacokinetics by Computer Modelling and Simulation.
5. Rectification methods for remotely sensed digital satellite data.

The successful applicants will register for a CNAA MPhil/PhD degree.
Applicants should have a good Honours Degree/Degree with commendation in appropriate discipline.

SCOTT SUTHERLAND SCHOOL OF ARCHITECTURE

Applications are invited from honours graduates in relevant disciplines for research leading to MPhil or PhD within topics related to architectural design.
Topics include:—
History of Architecture and Design Theory
Computer Aided Architectural Design
Building Component Design
Environmental Physics (various topics)
Design for Tourism

SCHOOL OF HOME ECONOMICS

Applications are invited from well-qualified graduates in Home Economics or related disciplines for studentships in the areas of: Domestic energy conservation, Safe handling temperatures, Sensory evaluation of foodstuffs, Performance of textile products.
Further details and applications forms available from:
The Secretary
Robert Gordon's Institute of Technology
Schoolhill
Aberdeen
AB9 1FR

BRISTOL POLYTECHNIC DEPARTMENT OF ACCOUNTING & FINANCE

Lecturer II/Senior Lecturers in Accounting — Ref No L/47

Applicants should be experienced qualified accountants in the private or public sector with a commitment to teaching a wide range of full-time and part-time students. A relevant degree would be an advantage.
Ability to teach in two or more of the following areas is required: Financial Accounting, Management Accounting, Internal Audit, Taxation, Data Processing. Encouragement will be given to research, consultancy and other personal development.
Successful applicants to take up the appointment in September 1984 in the Department of Accounting and Finance. The department services a broad spectrum of professional, degree and business courses and the duties of those appointed may be varied from year to year as requirements alter.
There is one permanent appointment and some full-time and half-time appointments for one year initially, with the possibility of renewal.
Salary Scale:
LII £7215-£10,683 (bar) — £11,568 per annum
SL £10,683-£12,662 (bar) — £13,443 per annum
The appointment will be made on the appropriate scale according to relevant previous service/experience.
(Progression from the LII scale to the SL scale is in accordance with the provisions of the Burnham Further Education Report.)
For further details and an application form, to be returned by 2 July 1984, please contact the Personnel Office, Bristol Polytechnic, Coldharbour Lane, Frenchay, Bristol or ring Bristol 656281, Ext 216 or 217.
Please quote Reference Number L/47 in all communications. (16469)

Polytechnic of Central London
Faculty of the Environment
35 Marylebone Road, London NW1 5LS

SENIOR LECTURER IN BUILDING

Applications are invited from candidates able to offer honours degree expertise in the teaching of Building Technology, preferably combined with expertise in the area of contract administration procedures.
Candidates must possess a first or higher degree in Building or an appropriate discipline, preferably in conjunction with corporate membership of CIOB.
Industrial experience is essential.
Salary scale: £11,670–£14,430 inclusive of London weighting. (under review).
Further particulars and application form from: The Personnel Officer, Polytechnic of Central London, 309 Regent Street, London W1R 8AL. Closing date: 6th July 1984. (55553) H3

Polytechnic of Central London
Faculty of Languages

LECTURER II/SENIOR LECTURER IN FRENCH
From October 1st 1984 (or as soon as possible thereafter)

A vacancy exists in the Faculty of Languages for a well qualified lecturer able to undertake teaching of French and Economics and/or Politics on the CNAA Modern Languages course (CNAA). French Language teaching will also be required. All classes are conducted in French and candidates should possess native or near-native competence in French.
Salary scale: LII £8,802–£10,683 (under review); SL £11,670–£13,533 (BARC) + £1,430 inclusive of London allowance.
For further details and application form apply to the Personnel Office, 309 Regent Street, London W1R 8AL. Closing date: 9th July 1984. (55554) H3

Bristol Polytechnic
Department of Economics & Social Science

RESEARCH ASSISTANT IN THE PRIVATE COSTS OF LOCAL GOVERNMENT SERVICE
Ref No. R/46
(Funded by the Leverhulme Trust)

Applications are invited for the post of Research Assistant to join an interdisciplinary team investigating the personal and private costs of county council membership. Applicants should have a good honours degree in Politics, Sociology or an allied field. Relevant postgraduate study and a valid and clean driving licence may well be required. There is a commitment to research. The appointment is for two years from November or Dec. 1984.
Salary scale: £5,415 – £6,123 per annum.
For further details and an application form, to be returned by 2nd July, 1984, please contact the Personnel Office, Bristol Polytechnic, Coldharbour Lane, Frenchay, Bristol or ring Bristol 656281, Ext. 217.
Please quote Ref. No. R/46 in all communications. (10734)

North East London Polytechnic
Department of Manufacturing Studies and Mechanical Engineering

Temporary Lecturer II in Mechanical Engineering
(one year fixed-term appointment)

A temporary opportunity exists for an engineering graduate to teach mechanical engineering to BTEC, HNC, HND and Degree students. Applicants should be able to teach Engineering Dynamics or Stress Analysis to Degree level.
The appointment, which will be for one year from September, 1984, will carry an annual salary of between £8,202 and £12,555 inclusive, depending on qualifications and experience.
Further details and application forms from the Personnel Office, North East London Polytechnic, Asta House, 156/164 High Road, Chadwell Heath, Essex RM6 6LX. Or telephone 01-590 7722 ext. 3121/3110. Please quote reference number 4/A/84.
Closing date for receipt of applications: 6th July.
(18460)

NELP North East London Polytechnic

Preston Polytechnic
NAB Information Technology Initiative

LECTURER II/SENIOR LECTURER – 2 Additional Posts

The Polytechnic is a Centre in the North of England for Information Technology. The Polytechnic is committed to expansion in this area and these two posts are nominated as part of a major expansion programme. Applications are invited from suitably qualified persons with recent business or industrial experience and/or a higher degree to join a team teaching on a group of degree and diploma courses.
Appointment to Lecturer II could well be of interest to newly qualified applicants.
Salary Scale – LII: £7215 to £11568 (lowest qualified), SL: £10683 to £13533 (bar) to £13428.
Application forms and further details are obtainable from the Personnel Office, Preston Polytechnic, Corporation Street, Preston, PR1 2TQ. Tel: (0772) 263031, quoting reference AA/1708.
For informal discussion, applicants may contact the Head of School, Dr W K Walmsley on extension 2268.
Closing date for receipt of completed applications: 6th July 1984.
The Polytechnic is being renamed Lancashire Polytechnic from September, 1984.

Faculty of Science

Professor/Head of School Posts
(Re-advertisement)

Applications are invited for the following newly created senior posts which arise from the continuing academic development programme of the Polytechnic and the establishment of a Faculty of Science comprising Schools of Chemistry, Biology, Mathematics and Statistics, Physics and Astronomy, Psychology.

Professor/Head of Physics & Astronomy (Ref. AA/121)

Professor/Head of Biology (Ref. AA/119)

Both posts are established as Burnham Head of Department Grade VI (Salary currently £16,832-£18,327, award pending).
Previous applicants will be automatically reconsidered.
Details and application forms and further details obtainable from the Clerk to the Polytechnic Council, Preston Polytechnic, Corporation Street, Preston PR1 2TQ, tel. (0772) 22141 ext 2006 quoting appropriate reference number. Closing date for receipt of completed applications — 20th July 1984.

The Polytechnic is being renamed Lancashire Polytechnic from September 1984.

PRESTON POLY TECHNIC

Brighton Polytechnic

CHELSEA SCHOOL OF HUMAN MOVEMENT

Head of Department Grade VI
£16,632-£18,327

A new Head of Department is required for Brighton Polytechnic's Chelsea School of Human Movement.
The Polytechnic is innovating in Leisure, Tourism and Recreation Management, as well as continuing developments in the BSc Sports Science and the BEd Physical education programmes, and is looking for strong, charismatic leadership for its Eastbourne interest in research.
Candidates should have a first degree or equivalent in Physical Education, Human Movement or a related area and preferably a higher degree and an interest in research. Experience in course development/management would be an advantage.
Application forms and further details are available from the Personnel Officer, Brighton Polytechnic, Mithras House, Moulsecoomb, Brighton, BN2 4AT. Tel: Brighton (0273) 693655 Ext 2636. Previous applicants will be automatically considered.
Closing date: July 13. (16480)

Polytechnic of the South Bank
Borough Road, London SE1 0AA
School of Quantitative Studies

PRINCIPAL LECTURER/SENIOR LECTURER IN QUANTITATIVE STUDIES
Ref: Q.02

Applications are invited for the above post within the area of study, from 1st September 1984.
The successful applicant will contribute to the teaching of both Quantitative Analysis and Computing on a wide range of mainly business related degree and diploma courses and will be expected to initiate and develop a role in the academic development of the School. Applicants should also have a special interest in Operational Research together with relevant business/industrial experience.
Salary will be in the following ranges: Senior Lecturer £13,206 (bar) — £15,078 inclusive of London Allowance. Senior Lecturer £11,670 (bar) — £14,430 inclusive of London Allowance.
Further particulars and application forms available from the Staffing Officer, Tel: 01-928 8989 Ext 2635.
Closing date for receipt of completed application form will be 20th July 1984.
The Polytechnic is an Equal Opportunities Employer.

Manchester Polytechnic
Faculty of Community Studies
Didsbury School of Education

LECTURER II IN SPECIAL EDUCATIONAL NEEDS

Applications are invited for the above post to work with a small team of tutors in the Special Educational Needs area of the Didsbury School of Education Studies. This area is well established on the BEd degree and covers the whole range of special needs including severe learning difficulties. The successful candidate will be expected to contribute to both full and in-service courses and should expect to work up to two evenings a week.
Qualifications in teaching and/or related disciplines will be looked for together with recent experience of working with children with special needs.
An ability to make a specialist contribution in any of the following areas: language/communication skills, music/communication, curriculum development; special needs in ordinary primary schools.
Salary scale £7,815 – £11,568 per annum.
For further details and an application form (enclosing a stamped addressed envelope) apply by 6 July, 1984 to Jean Hall, Secretary, Manchester Polytechnic, Didsbury School of Education, Didsbury, Manchester M20 8RR. Tel: 061-445 7564.
(16482)

Polytechnics continued

Faculty of Social and Health Sciences

PROFESSOR AND HEAD OF DEPARTMENT OF PSYCHOLOGY (Jordanstown)

Applications are invited for the post of Professor and Head of Department for this new department which has been established on the basis of the Department of Psychology at the New University of Ulster and the School of Psychology at Ulster Polytechnic.
The Professor and Head of Department will be expected to give academic leadership of the highest quality in teaching and research, and will be responsible for the management of this large multi-campus department.
Applicants should have high academic qualifications, substantial achievements in research and teaching, and experience as an educational manager.

Faculty of Technology (Jordanstown)

PROFESSOR AND HEAD OF DEPARTMENT OF BUILDING

Applications are invited for the above post.
Applicants should have postgraduate qualifications; be Corporate Members of the Chartered Institute of Building and have appropriate teaching, research and/or industrial experience.
Appointments will be on University Professional Range which has a minimum salary of £17,275 (under review).
Further details are available from the Staffing Officer Designate, Proposed University of Ulster, PO Box 35, Coleraine, Co. Londonderry BT52 1SA, to whom applications should be sent before 9 July 1984.

University of Ulster (Proposed)

DUNDEE COLLEGE OF TECHNOLOGY

Senior Lectureship in Thermodynamics

Applicants should possess a good honours degree in mechanical engineering, and preferably a higher degree, together with appropriate teaching and industrial or research experience.
The person appointed will be required to teach on a variety of courses up to honours degree level. He/she will also be required to undertake responsibility for subject development, the initiation of research and the further development of links with industry.
Salary scale: £12,777–£14,184 (bar)–£16,104, with initial placing depending upon approved previous experience. Financial assistance towards the cost of removal expenses may be payable.
Further particulars and application forms obtainable from the Personnel Officer, Dundee College of Technology, Bell Street, Dundee DD1 1HG to whom completed forms should be returned by 6 July 1984. (16468)

DUNDEE COLLEGE OF TECHNOLOGY
Department of Molecular and Life Sciences

LECTURESHIP IN BIOLOGICAL SCIENCE

The principal duties will be in Microbiology but the successful candidate will be expected to contribute to other discipline areas e.g. Biotechnology, Applied Microbiology. The person appointed will be required to teach up to Honours degree level and to supervise postgraduate research. Applicants must possess a good Honours Degree in an appropriate discipline and have recent relevant research and/or industrial experience.
Salary scale: £8,688–£12,777 (bar)–£13,716, with initial placing depending upon approved previous experience. Financial assistance towards the cost of removal expenses may be payable.
Further particulars and application form obtainable from the Personnel Officer, Dundee College of Technology, Bell Street, Dundee DD1 1HG with whom applications should be lodged by 6th June, 1984. (16493)

HUDDERSFIELD POLYTECHNIC

SENIOR CAREERS OFFICER
Grade 5O1 £9,060–£9,660
Ref: NT834

This is a newly created post and the person appointed will be expected to expand and develop the Polytechnic's Careers Service. Applicants should be graduates, preferably with experience of working in an Institution of Higher Education and training in careers counselling.
Application forms (to be returned by 10th July 1984) and further details from: The Personnel Office, The Polytechnic, Queensgate, Huddersfield HD1 3DH. Please send foolscap sae. (16481)

Teesside Polytechnic
Department of Chemistry

LECTURER II/SENIOR LECTURER IN ORGANIC CHEMISTRY

Applications are invited from well qualified chemists with research experience in organic chemistry. The successful candidate will be expected to contribute to the teaching of organic chemistry up to and including final year honours level and to initiate and conduct a research programme.
The post is tenable from 1st September 1984 or as soon as possible thereafter.
Salary: £7,215–£11,568 (efficiency bar) — £13,554 (work bar) – £13,443 (under review).
A appointment may be made at either Lecturer II or Senior Lecturer level but the salary on appointment will not be greater than £13,554.
Further particulars and application forms may be obtained from the Personal Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 3BA.
Closing date: 14 days after the appearance of this advertisement.
Cleveland County Council is an equal opportunity employer. (53556) H3

Thames Polytechnic
School of Electrical and Electronic Engineering

LII/SL IN ELECTRONIC ENGINEERING

The School requires a person with drive and initiative with preference to those who can offer expertise in the application of computers and microprocessors. A good honours degree in Electronics or Computer Science and industrial experience, or a higher degree, are required. Informal enquiries to Dr. Ian Batterby (01 854 2030 Ext 454).
Salary scale: (under review) Senior Lecturer £11,670 – £13,554 (bar) — £14,430. Lecturer II £8802 – £12555 inclusive.
Further particulars and application form from the Staffing Officer, Thames Polytechnic, Wellington Street, London SE18 6PF to be returned by 17 July 1984.
Thames Polytechnic is an equal opportunities employer. H3

The Polytechnic of North London

Applications are invited for the following appointments, tenable from 1 September, 1984 or as soon as possible thereafter.

The Business School

SENIOR LECTURER/ LECTURER GRADE II IN ECONOMICS

The successful candidate will be expected to teach mainly in the areas of business decision-making and international business at first degree and higher national diploma level. Some involvement in research and in administrative duties in the School will also be expected.
Candidates should possess a good first degree in economics or in a related area, and a Master's degree in Economics. Relevant teaching experience, a research degree, publications and industrial consultancy experience would be definite advantages.

Department of Environmental Design

SENIOR LECTURER/ LECTURER GRADE II IN PHYSICAL PLANNING/URBAN DESIGN

An appropriately experienced planner, additionally qualified in architecture and landscape architecture, is required to teach physical planning in the Schools of Planning and Architecture, particular interest in the theory and practice of Urban Design and/or Conservation would be advantageous.
The successful candidate will be encouraged to develop the subject area and its applications throughout the Department, to undertake associated research and/or consultancy and be eligible for leadership roles, such as Course Tutor or Head of School, offered on a rotational basis.

Department of History, Philosophy and European Studies

LECTURER GRADE II IN GOVERNMENT AND POLITICS

To teach both on the Contemporary European Studies degree and elsewhere in the Polytechnic. The successful candidate will be expected to teach both comparative government (with particular reference to Western and Eastern Europe) and other aspects of European politics and an interest in Modern Political Thought may also be an advantage. A working knowledge of French or German is important. The person appointed will also be required to play an administrative role in the European Studies Division.

TEMPORARY LECTURER GRADE II IN MODERN HISTORY

for the period from 1 September 1984 to 31 August 1985.
To teach 20th century European and World History both in the History Department and elsewhere in the Polytechnic. An interest in inter-European history and/or international relations would be an advantage.

Department of Mathematics, Statistics and Computing

LECTURER GRADE II IN MATHEMATICS – TWO POSTS

Both of the successful candidates will be required to teach Mathematics at all levels within the department, in particular, to contribute to the further development of courses linking Mathematics and Computing. For one post, a specialist interest in Numerical Methods is considered desirable. For the second post, a specialist interest in Finite Mathematics and its applications to Computer Science is required. Applicants should have a strong background in Mathematics and relevant research or industrial experience.
The Department has a range of courses including BSc honours degrees in Mathematics and Computing, Mathematics and Statistics and Mathematics and Computing, also an HND in Mathematics, Statistics and Computing and a variety of Postgraduate courses.

Department of Teaching Studies

TEMPORARY LECTURER GRADE II IN PRIMARY MATHEMATICS EDUCATION

For the period from 1 September 1984 to 31 August 1985.
Applicants should be able to contribute to Mathematics and Mathematics Education courses in initial teacher training and service work. They should have a sound mathematical background, recent primary experience and specialist knowledge in the development in Primary Mathematics Education.
Salary scale: Senior Lecturer £10,683 – £13,554 (bar) — £14,430. Lecturer Grade II: £7,815 – £11,568, plus £981 London Allowance. (Staff at the top of Senior Lecturer Grade II scale can expect progression to the bar for Lecturer scale subject to satisfactory annual efficiency requirement).
Application form and further details (please state post in which interested) are obtainable from the Establishment Officer, Polytechnic of North London, Holloway Road, London N7 8DB.
Closing date for the receipt of applications 14 days from the appearance of this advertisement. (107151) H3

Oxford Polytechnic
Faculty of Technology
Department of Catering Management

LECTURER II/SENIOR LECTURER IN BUSINESS DEVELOPMENT FOR THE HOSPITALITY INDUSTRY

Applications are invited for the above post from suitably qualified candidates. The post will be available from 1 September, 1984 or as soon as possible thereafter. Applicants should have a background in business development and research and should hold relevant qualifications. Recent experience of industry and research or teaching experience would be advantageous. Applicants should be able to develop and apply their expertise to the needs of the hospitality industry in honours degree teaching programmes. Ref: CM/J/14.

LECTURER II/SENIOR LECTURER IN NUTRITION FOR THE CATERING INDUSTRY

Consideration will be given to candidates qualified in nutrition and who have had research and/or relevant professional experience. The appointee will teach on honours degree programmes in both catering and food science and nutrition. Consideration will be given to candidates who have demonstrated research potential and who have a sound understanding of nutrition and catering operations. Ref: CM/J/1.
Salary range for the above posts: £7,215 – £15,443 (under review).
Closing date, both posts: 9 July, 1984.
Application forms and further details from Miss M. Swan, Staffing Section, Oxford Polytechnic, Gipsy Lane, Headington, Oxford OX3 0BP. Tel: (0865) 64777, ext. 364. (53505) H3

Bristol Polytechnic
Education Department

LECTURER II/SENIOR LECTURER IN EDUCATION (SPECIAL EDUCATION)
Ref. No. L/48

A lecturer is required for September 1984 to January 1985 in special educational needs in ordinary schools.
Candidates must have good and substantial experience of teaching and possess additional relevant qualifications. An interest in the development of research will be welcome.

ASSOCIATE LECTURER II/SENIOR LECTURER IN EDUCATION
Ref. No. L/49

Applicants are invited for a one year half-time appointment from September 1984.
Candidates should have an interest in the relationship of theory to practice and possess successful experience of teaching in schools. Qualifications in curriculum theory and/or psychology will be particularly welcome. Associate Lecturer's salary is 50% of the full-time scale.
Salary Scale: LII £7,215–£10,683 (bar) — £11,568 per annum. SL £10,683–£13,554 (bar) – £13,443 per annum.
The appointment will be made on the appropriate scale according to relevant previous service/experience. (Progression from the LII scale to the SL scale is in accordance with the provisions of the Burnham Further Education Report).
For further details and an application form, to be returned by 6th July 1984, please contact the Personnel Office, Bristol Polytechnic, Coldharbour Lane, Frenchay, Bristol or ring Bristol 656261, Ext. 216 or 217.
Please quote Reference Numbers in all communications. (55559) H3

Thames Polytechnic
School of Biological Sciences and Environmental Health

Lectureships in Biotechnology

SL in MICROBIAL GENETICS LII in BIOLOGICAL CHEMISTRY

Applications are invited for the above posts from appropriately qualified graduates. Experience in one or more of the following is essential: molecular/microbial genetics; microbial physiology/biochemistry; fermentation technology; natural product chemistry, enzyme/cell technology.
Salary scale: £8,202–£12,555 inclusive (under review).

School of Mechanical Engineering

RESEARCHER
(3 year appointment)

to join a research team investigating the dynamics of underground rail vehicles by experimental, theoretical and computer work. The project is supported by the National Coal Board and the SERC. Applicants should have a good honours degree in engineering and preferably some relevant postgraduate experience. The successful candidate will be able to register for a higher degree.
Salary scale: £8,376–£9,366 inclusive.
Further particulars and application form from the Staffing Officer, Thames Polytechnic, Wellington Street, London SE18 6PF, to be returned by 3rd July 1984.
Thames Polytechnic is an equal opportunities employer.

Middlesex Polytechnic
School of Accounting and Finance

PART-TIME LECTURERS IN ACCOUNTING AND FINANCE

Applications are invited from suitably qualified applicants for the academic session commencing September 1984.
For further details and application forms contact: Colin Jones, Middlesex Polytechnic, The Burroughs, London NW4 4BT. (10715) H3

Fellowships

Merton College, Oxford

JUNIOR RESEARCH FELLOWSHIPS AND SENIOR SCHOLARSHIPS 1985

The college proposes, if candidates of sufficient merit present themselves, to elect two or three Junior Research Fellowships and to two or three Senior Scholarships in 1985. These awards are open to both men and women. Candidates for Junior Research Fellowships must be under the age of 27 on 1st October 1985; candidates for Senior Scholarships must be under the age of 36, or, in the case of Oxford graduates, must not have exceeded 18 terms from the date of matriculation.
Details of the awards and of the method of applying for them may be obtained from the Warden's secretary, Merton College, Oxford, OX1 4JD. The closing date for applications is Saturday 20th October 1984. (10720) H2

Colleges of Further Education

Watford College Herts

Required as soon as possible

PRINCIPAL LECTURER IN ELECTRONICS AND COMPUTER ENGINEERING

Salary under review: Principal Lecturer £19,512 – £13,938 (bar) — £15,744 per annum.
Applications are invited from appropriately qualified candidates with recent teaching, trial and teaching experience to take responsibility for the development of new and existing courses in Electronics and Computer Engineering.
Assistance may be given with household removal expenses.
Further details and application forms available from the Chief Administrative Officer, Watford College, Hempstead Road, Watford, Herts WD1 3EZ. Tel: Watford 24731 Ext. 257. (55565) H3

Trent Polytechnic
Department of Business Studies

LECTURER GRADE II/SENIOR LECTURER IN ORGANISATIONAL BEHAVIOUR
(£7,215–£12,443)

Candidates should be social science graduates, preferably with a multidisciplinary background and possess a higher degree or professional qualifications and/or substantial experience. An interest in innovation in group-orientated social psychology teaching for business students would be advantageous.
Further details and form of application are available from the Staff Officer, Trent Polytechnic, Burton Street, Nottingham NG1 4BU. Telephone (0602) 411851 (24 hours). Ref. 1925. Closing date 13th July 1984. (55558) H3

Colleges of Further Education continued

Faculty of Art & Design
Cornwall College of Further & Higher Education
Redruth, Cornwall

LECTURER GRADE II IN GRAPHIC DESIGN

Applications are sought from established Graphic Designers to teach at both DATEC Diploma and Higher Diploma levels. The successful applicant, who will be expected to have exceptional design ability and industrial and professional experience, will be required to take up the appointment in September 1984, or as soon as possible thereafter. Previous teaching experience, although desirable, is not essential.

Salary Scale: Lecturer II £7,215 to £11,568 according to previous experience.

LECTURER GRADE I IN PHOTOGRAPHY

Applications are sought from established Photographers to teach at both DATEC Diploma and Higher Diploma levels. The successful applicant, who will be expected to have exceptional photographic ability and industrial and professional experience, will be required to take up the appointment in September 1984, or as soon as possible thereafter. Previous teaching experience, although desirable, is not essential.

Salary Scale: Lecturer I £5,649 to £9,735 according to previous experience.

Further details of the above vacancy may be obtained by sending a stamped addressed envelope to The Principal, to whom all completed application forms should be returned within two weeks of the appearance of this advertisement.

(16479)

Cornwall

THE CO-OPERATIVE COLLEGE
INTERNATIONAL CO-OPERATIVE TRAINING CENTRE

TUTOR IN CO-OPERATIVE DEVELOPMENT OVERSEAS

Applications are invited for a two-year contract appointment commencing September 1984, with possibility of extension.

The chief requirement is an ability to teach Development Economics and/or Co-operative Organisation to managers and Civil Servants from LDC's. Management experience with Co-operatives would be a significant advantage. Initial appointment would be on the Burnham salary scale £7,215 to £11,568 (under review).

Curriculum Vitae to: The Principal, The Co-operative College, Stanford Hall, Loughborough, Leics. LE12 5QR, from whom further particulars may be obtained.

Closing date 9th July, 1984.

(18474)

CROYDON COLLEGE

FAIRFIELD, CROYDON CR9 1DX
Tel: 01-688 9271/6

Faculty of Art and Design
Lecturer Grade II (Ceramics)

A specialist teacher of Ceramics and Design is required from September 1984, or as soon as possible thereafter, to join the Ceramic Area currently running a two year Higher National DATEC Diploma.

Applicants will be expected to have teaching and practical experience in the craft of ceramics and a command of industrial and semi-industrial moulding and forming techniques, and be familiar with most aspects of surface decoration. The successful applicant will also have some administrative and tutorial responsibilities and assist the Course Director in the day-to-day running of the course.

The salary for this post will be in accordance with the current Burnham Further Education Award and is at present:

Lecturer II £7,950–£12,213 pa
Including the London Weighting Allowance

Further details and application forms may be obtained from: The Personnel Section, Croydon College, Fairfield, Croydon CR9 1DX, to whom completed application forms should be returned within fourteen days of the appearance of this advertisement.

(16490)

Nene College
Blackwood Hodge Management Centre
Required as soon as possible

Programme Directors
(£10,663-£15,744 under review)

To join the Short Course Unit. Applicants should be capable of working at senior levels and should possess a creative expertise in designing, marketing, running and teaching general management programmes.

Required from 1 September

Lecturer/Senior Lecturer in Management Studies
(£7,215-£13,443 under review)

to undertake a leading role in the promotion, organisation and teaching of qualification courses and course components in Marketing.

Blackwood Hodge Management Centre, which opened in 1981, is a high technology residential Management Centre situated in an attractive parkland setting on the outskirts of Northampton. SAE for further details to: Dean, Blackwood Hodge Management Centre, Nene College, Moulton Park, Northampton NN2 7AL.

(16484)

Nonington College
Kent County Council Education Committee

TWO LECTURER II/SENIOR LECTURER POSTS IN MOVEMENT STUDIES

to commence September 1984

Applications are invited for two one-year appointments to cover BA (Hons.) degree, lecturing in Exercise Physiology, Human Physiology and Biomechanics. A contribution in the practical courses of the degrees would be an advantage.

ONE LECTURER II/SENIOR LECTURER POST IN BIOLOGY

to commence September 1984

Applications are invited for a one year appointment (possibly renewable for a second year) to cover BA (Hons.) degree, lecturing in Animal Physiology and Human Physiology, an ability to teach other than third year Biology courses would be an advantage.

Further details may be obtained from the Head of Movement Studies Department: Tel: 0304 840971. Applications to the Principal: Nonington College, Nonington, Dover, Kent CT15 4HD immediately.

(16721)

H7

Colleges of Higher Education

ST. MARY'S COLLEGE
Strawberry Hill, Twickenham

St. Mary's College is a Roman Catholic College of Higher Education and offers undergraduate courses leading to two-subject BA, BEd and BSc Honours degrees of the University of Surrey, as well as to a variety of postgraduate courses. Currently, courses leading to University of London qualifications are being phased out. The College has about 1,200 students of whom approximately half are registered for BA/BSc degrees and half for the BEd degree.

Whilst applicants must meet the specific requirements outlined below, recent school teaching experience would be advantageous.

Applications are invited for the following lectureships:

(1) Biology

Applicants must have a first degree in Biology and a further qualification in ANIMAL PHYSIOLOGY.

(2) English

Applicants should have a first degree in English and a further qualification in APPLIED LINGUISTICS especially second language acquisition.

(3) French

Applicants should have a first degree in French, with or without a second language, together with a higher qualification. The successful applicant will mainly teach language but also C19 or C20 literature.

(4) History

This is a half-time permanent appointment and applicants should have an interest in EUROPEAN HISTORY particularly of the 17th and 18th Centuries.

(5) Movement Studies

Applicants should have a qualification in SPORTS PSYCHOLOGY and in one or more of the following: volleyball/swimming/track and field studies.

(6) Physics

Applicants should have a special interest in MICROELECTRONICS and the application of MICROCOMPUTERS to the control and evaluation of Physics experiments.

(7) Sociology

Applicants should have a first degree in Sociology and preferably a further qualification in Sociological Methods (to include quantitive and computing components), together with *one* or the Comparative Social Structure, Political Sociology, or Secondary Method for PGCE.

Appointments will commence on 1st January 1985, or 1st September 1984 if successful applicants are available at the earlier date.

Salary Scale: Burnham *FE/HE LII/SL* plus London Allowance.

Closing date for receipt of applications: Friday 6th July 1984.

Further details from: The Principal, St. Mary's College, Strawberry Hill, Twickenham, Middlesex TW1 4SX.

(14995)

BUCKINGHAMSHIRE COLLEGE OF HIGHER EDUCATION

School of Management Studies and Languages

Lecturer II/ Senior Lecturer in Accounting

Applications are invited for the above post which is available immediately. The successful candidate will join a strong team of linguist and business staff who have developed a series of under-graduate and post-graduate programmes with a European orientation including a unique B.A. Honours degree in European Business Studies which operates in conjunction with partner institutions in France, W. Germany and Spain.

The person appointed will be a graduate with either professional accounting experience or a postgraduate qualification. A competence in either French, German or Spanish is desirable as is also a professional or research interest in comparative or international accounting.

The appointment will be made at either Lecturer II or Senior Lecturer depending on qualifications and experience.

Salary Scale: Lecturer II £7215-£11,568
Senior Lecturer £10,663-£12,552
+Fringe London Allowance of £258.

Further details and an application form are available on receipt of a S.A.E. from: Assistant Director, Buckinghamshire College of Higher Education, Queen Alexandra Road, High Wycombe, Bucks.

(16489)

WEST SUSSEX INSTITUTE OF HIGHER EDUCATION
(Incorporating Bishop Otter College, Chichester and Bognor Regis College)

Applications are invited from suitably qualified and experienced graduates for the following posts to be appointed as soon as possible.

1. PRINCIPAL LECTURER (BURNHAM FE) IN PRIMARY EDUCATION

Relevant School experience, research experience and leadership in teacher training are required for this new post of leadership in teacher training.

2. LECTURER II (BURNHAM FE)

Initial temporary post for three years. Recent school experience, particularly in multi-cultural education or in work with children with learning difficulties are required for this post in initial and in-service teacher training.

3. TWO POSTS IN DANCE, L.II (BURNHAM FE)

Initial temporary appointment for three years. Recent school experience and wide experience of dance are required for work on a BA Related Arts degree and a BEd (Honours) degree.

Application forms and further details should be obtained from The Director's Secretary, West Sussex Institute of Higher Education, The Dome, Upper Bognor Road, Bognor Regis, West Sussex PO21 1HR (Tel: 0243-865581) and completed forms returned by July 9th, 1984.

(16468)

Essex County Council
Chelmer Institute of Higher Education

Schools of Initial and Inservice Teacher Education, Brentwood site

Lecturer II/Senior Lecturer in ART EDUCATION required from 1st January 1985 to contribute mainly to a new Primary B.Ed. (Hons.) degree, with some inputs also into inservice education. The Primary B.Ed. has a very clear professional emphasis and a tutor is sought who is not only committed to Art but also has good experience in primary schools. The possibility exists that the person appointed might be asked to be responsible for leadership of the Art area in the Primary B.Ed.

Salary: Lecturer II £7215–£11,568 per annum. Senior Lecturer £10,663–£12,552 (bar at £12,552) per annum plus £258 London Weighting.

Applications forms and further details available from the Principal Administrative Officer, Chelmer Institute of Higher Education, Victoria Road South, Chelmsford, CM1 1LL.

Telephone Chelmsford 354491 Ext 347. Closing date 6th July 1984.

(16485)

H8

St Martin's College of Higher Education
Lancaster

LECTURER IN MODERN HISTORY

Applications are invited for appointment from 1st January 1985 (or earlier if possible) for the post of Lecturer in Modern History to the Joint Honours BA and Professional Studies courses. Expertise in Russian and/or Russian history is desirable and applicants should have recent experience of Comprehensive and/or Primary School teaching. Salary will be in relation to qualifications and experience and in accordance with the Burnham FE scale for Lecturer II/Senior Lecturer.

Further details and application form must be obtained from The Principal, St Martin's College, Lancaster LA1 3JD. Completed application forms should be returned by 6th July. (16488)

King Alfred's College
Winchester

PART-TIME LECTURER IN SOCIOLOGY

Required to teach contemporary social issues at degree level for up to 4 hours (on one day) per week throughout the year. Payment: £6.13 per contact period. Salary: Further details from: The Principal, King Alfred's College, Winchester SO22 4NR.

(Closing date 6th July 1984.)

(53356)

H8

Colleges of Higher Education continued

School of Applied Social Studies

SOCIAL POLICY LECTURER II/ SENIOR LECTURER

Applications are invited from suitably qualified persons to teach Social Policy on undergraduate and professional courses. The successful applicant will be required to contribute to course development, research and consultancy within the School, including the development of a postgraduate Diploma in Housing.

It is envisaged that the appointment will be effective from 1st September 1984, or as soon as possible thereafter.

Salary scales:
Senior Lecturer £10,663-£12,552 (bar) - £13,443
Lecturer II £7,215-£11,568

Application forms may be obtained from the following: The Personal Office, Humberside College of Higher Education, Cottingham Road, Hull HU6 7RT. Tel: (0482) 446506. Closing date 3rd July, 1984.

HUMBERSIDE COLLEGE of Higher Education

Christ Church College of Higher Education
Canterbury

LECTURER II/SENIOR LECTURER (TELEVISION)

The College invites applications from suitably qualified candidates for the above post in the Radio, Film and Television Department. Applicants should have a wide experience and knowledge of both the theory and practice of Television. Additional experience of other branches of media studies is also desirable. The College may consider splitting the post on a time-shares basis. The appointment will take effect from the beginning of the Autumn Term or as soon as possible afterwards.

The College has approximately 1,000 students and offers BA, BEd and BSc degrees, DipCE, advanced diplomas and higher degrees in Education.

Salary scale: Lecturer II/Senior Lecturer £7,215–£13,443 pa (under review).

For further details write to Mrs Jean Long, Personal Assistant to Principal, Christ Church College, Canterbury enclosing a stamped addressed envelope, to whom applications should be sent not later than 13th July.

H8

Worcester College of Higher Education
Hereford and Worcester County Council
School of Education and Teaching Studies
Division of Physical Education

Applications are invited for the temporary post of

LECTURER IN PHYSICAL EDUCATION/HUMAN MOVEMENT

The appointment will be made on the Lecturer II/Senior Lecturer Scale, currently £7,215 to £13,443 (under review) and will be tenable from 1st September 1984 to 31st August 1986. The appointment will terminate 31st August 1986 even if the appointment is taken up after 1st September 1984.

Applicants should hold an appropriate honours degree, and be able to sound experience in the education of primary children, and useful expertise in Human Movement.

Further details are available from The Principal, Worcester College of Higher Education, Henwick Grove, Worcester, WR2 6AJ. Tel: 0905 748080 to whom applications should be returned immediately.

(53566)

H8

Administration

Council for National Academic Awards

ASSISTANT REGISTRARS
(Two Temporary Posts)

Applications are invited for two posts of Assistant Registrar, with responsibilities for 1. Education; and 2. Science and Technology.

In addition to their work in the above subject areas, the Assistant Registrars will be involved in the development of the Council's academic policy generally.

The posts are offered on a temporary basis from 1st October 1984 until 31st July 1988 and arise from the proposed absence of the current postholders whilst undertaking periods of maternity leave.

Candidates for the post should be well qualified academically and/or professionally and should have appropriate teaching and/or academic administrative experience. Applicants seeking secondment to the Council would be welcomed.

The salary scale is £11,670–£16,281 pa including London Weighting. Salary on appointment will not exceed £14,925 pa.

Further particulars may be obtained from:

Assistant Secretary (Personnel)
CNAA
344/354 Gray's Inn Road
London WC1X 8BP. Tel: 01-278 4411

to whom applications giving details of qualifications and experience and the names of two referees should be submitted by 25 July 1984.

(16487)

University of Reading
Office of the Registrar

SENIOR ADMINISTRATIVE ASSISTANT

Applications are invited for the post of Senior Administrative Assistant in the Office of the Registrar. The post will be initially based in the Faculty Office of the Faculty of Letters and Social Studies and duties will include the administration of undergraduate and postgraduate courses and the management of the Faculty Office.

Salary Scale: Lecturer II £7,215–£11,568
Senior Lecturer £10,663–£12,552
+ Fringe London Allowance of £258.

Further details and an application form are available on receipt of a S.A.E. from: Assistant Director, Buckinghamshire College of Higher Education, Queen Alexandra Road, High Wycombe, Bucks.

(16489)

King Alfred's College
Winchester

ADMISSIONS OFFICER

The College is seeking a graduate or equivalent with suitable experience to be responsible for students' admissions, and publicity, from 1st September 1984. National Joint Council for Local Authorities conditions of services.

Salary: 501 £9,060 to £9,660 (under review).

Further details from Registrar, King Alfred's College, Sparkford Road, Winchester. Tel: 44281.

Applications to The Principal by 6th July 1984.

H12

Colleges of Technology

Lothian Regional Council
NAPIER COLLEGE OF COMMERCE AND TECHNOLOGY

LECTURER A IN ACCOUNTING

Salary on Scale: £8,688–£12,777 (Bar)–£13,716

required in the Department of Accounting to teach financial accounting, management accounting, taxation and auditing to final professional and/or degree level.

Applicants for this post must hold a professional qualification or an appropriate degree and have, preferably, some teaching/professional/industrial experience.

Application forms and further particulars from: The Administrative Officer (Personnel), Napier College of Commerce and Technology, Colinton Road, Edinburgh EH10 5DT. Tel: 031 447 7070.

(16481)

Surrey Education Committee
North East Surrey College of Technology

Reigate Road, Ewell, Epsom, Surrey KT17 3DS

Applications are invited for the following posts to be filled from 1 September 1984:

SENIOR LECTURER IN COMPUTER STUDIES (SYSTEMS ANALYSIS) LECTURER I IN STATISTICS/ COMPUTING

Salary Scale: SENIOR LEC. TURER: £10,683 p.a. - £13,443 p.a., LECTURER I: £5,649 – £9,735.

Plus £258 p.a. London Fringe Allowance. Generous relocation expenses in approved cases.

Please send a stamped addressed envelope for further particulars and application form from the Vice-Principal. H5

University of London
King's College

Centre of Medical Law and Ethics

POSTGRADUATE DIPLOMA IN MEDICAL ETHICS AND LAW

Entry October 1984

Applications are invited for this new one-year Diploma course, commencing in October 1984.

The course aims to further the understanding of those whose work brings them into contact with medical ethics and law and those who wish to embark on further study or research. The course is open to all those who have a first degree in a relevant discipline, eg medicine, law, philosophy and theology.

Further details from the Postgraduate Secretary, Faculty of Laws, King's College London, Strand, London WC2R 2LS.

(16717)

H22

Courses

University of London
King's College

Centre of Medical Law and Ethics

POSTGRADUATE DIPLOMA IN MEDICAL ETHICS AND LAW

Entry October 1984

Applications are invited for this new one-year Diploma course, commencing in October 1984.

The course aims to further the understanding of those whose work brings them into contact with medical ethics and law and those who wish to embark on further study or research. The course is open to all those who have a first degree in a relevant discipline, eg medicine, law, philosophy and theology.

Further details from the Postgraduate Secretary, Faculty of Laws, King's College London, Strand, London WC2R 2LS.

H22

Further Education continued

WATFORD COLLEGE
require as soon as possible

PRINCIPAL LECTURER IN ELECTRONIC & COMPUTER ENGINEERING

Salary (under review): Principal Lecturer £12,519–£13,938 (bar) – £15,744 per annum.

Applications are invited from appropriately qualified candidates with recent industrial teaching experience to take responsibility for the development of new existing courses in Electronic and Computer Engineering.

Assistance may be given with household removal expenses.

Further details and application forms available from:

The Chief Administrative Officer
Watford College
Hempstead Road
Watford, Herts. WD1 3EZ
Tel: Watford 41211, Ext. 56

(1552)

Research & Studentships

Portsmouth Polytechnic
DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

CASE STUDENTSHIP MICROWAVE DIGITAL INSTRUMENTATION AND OSCILLATORS

Applications are invited from candidates holding an MSc, a First or Upper Second Class Degree or expecting to obtain such qualifications, to undertake research in co-operation with Plessey Research (Caswell) Ltd., in the Study and Characterisation of phase jitter noise mechanisms in microwave oscillators using digital, analogue and numerical algorithms.

The successful candidate will join the Microwave Systems Research Group and co-operate with the researchers in related fields of Terrestrial and Satellite Telecommunications. Current research activities at Plessey (Caswell) Ltd. include advanced multiphase codecs and advanced multimode systems.

The Plessey is prepared to pay an annual honorary to the candidate as well as fees and subsistence expenses while at Caswell, in addition to the SERC grant.

Further details and application forms from Mrs Sandra Whitehead, Department of Electrical and Electronic Engineering, Portsmouth Polytechnic, Anglesea Road, Portsmouth, Hants PO1 3DJ (Tel: 0705 827681 Ext. 2241) or Dr. I. R. Smith at the address of Plessey, Caswell (Tel: 0327 50581.

(16494)

University of Southampton
Faculty of Mathematical Studies

SERC ENGINEERING MATHEMATICS STUDENTSHIP

Applications are invited from graduates or candidates with a first or upper second honours degree in Mathematics for a SERC Research Studentship tenable from October, 1984.

The Studentship is available for work on the mathematical modelling of the location of assets from day to day. The successful applicant will be required to register for a higher degree and will be based in the Department of Mathematics but will collaborate closely with the Institute of Irrigation Studies.

Enquiries should be addressed to Dr. G. Drake, Faculty of Mathematical Studies, The University, Highfield, Southampton SO9 5NH (Tel: 0703 559122, Ext. 2680) to whom applications, including the names and addresses of two referees, should be sent by 20th July 1984. Please quote Ref: YA28.

(16491)

H11

University of Hull
Department of Physics

RESEARCH ASSISTANT

An SERC supported post is available from 1st October 1984, for 18 months for spectroscopic studies of amorphous and crystalline semiconductors involving optical, microwave and low temperature techniques. Salary at lower end of 1A scale (£7,190-£11,115 pa under review). Curriculum vitae and names of two referees as soon as possible to Dr. R. C. Fivaz, Department of Physics, University of Hull HU6 7RX. (Further particulars available).

(16492)

H11

Appointments Wanted

Personal

IMMEDIATE ADVANCES £100 – £50,000. Written terms on request. Regional Trust Ltd., 3131 Tower Bridge Road, Bromley, London W12 4DD. Phone 01-4912934 or 388 1416. LOOO

DR FI(L.)S9 German, 18 years teaching experience (French and English secondary school) and at teacher training at German university would like to settle down in Britain. Position wanted in secondary or tertiary education (German and English as a foreign language, teacher training), publishing house, etc. Please contact D/44 3828/15 or write to 3, The Cresent, Sheffield S17 4AT. (16719)

H18

Colleges of Higher Education

ST. MARY'S COLLEGE
Strawberry Hill, Twickenham

St. Mary's College is a Roman Catholic College of Higher Education and offers undergraduate courses leading to two-subject BA, BEd and BSc Honours degrees of the University of Surrey, as well as to a variety of postgraduate courses. Currently, courses leading to University of London qualifications are being phased out. The College has about 1,200 students of whom approximately half are registered for BA/BSc degrees and half for the BEd degree.

Whilst applicants must meet the specific requirements outlined below, recent school teaching experience would be advantageous.

Applications are invited for the following lectureships:

(1) Biology

Applicants must have a first degree in Biology and a further qualification in ANIMAL PHYSIOLOGY.

(2) English

Applicants should have a first degree in English and a further qualification in APPLIED LINGUISTICS especially second language acquisition.

(3) French

Applicants should have a first degree in French, with or without a second language, together with a higher qualification. The successful applicant will mainly teach language but also C19 or C20 literature.

(4) History

This is a half-time permanent appointment and applicants should have an interest in EUROPEAN HISTORY particularly of the 17th and 18th Centuries.

(5) Movement Studies

Applicants should have a qualification in SPORTS PSYCHOLOGY and in one or more of the following: volleyball/swimming/track and field studies.

(6) Physics

Applicants should have a special interest in MICROELECTRONICS and the application of MICROCOMPUTERS to the control and evaluation of Physics experiments.

(7) Sociology

Applicants should have a first degree in Sociology and preferably a further qualification in Sociological Methods (to include quantitive and computing components), together with *one* or the Comparative Social Structure, Political Sociology, or Secondary Method for PGCE.

Appointments will commence on 1st January 1985, or 1st September 1984 if successful applicants are available at the earlier date.

Salary Scale: Burnham *FE/HE LII/SL* plus London Allowance.

Closing date for receipt of applications: Friday 6th July 1984.

Further details from: The Principal, St. Mary's College, Strawberry Hill, Twickenham, Middlesex TW1 4SX.

(14995)

General Vacancies

RESEARCH ASSISTANTS (PART-TIME)

Applications are invited from students who have, or expect to obtain in the summer of 1985, a good honours degree in an appropriate field of study to work on one of the projects listed below. Posts will be tenable for up to two academic year in the first instance, commencing on 30th September 1st. Salary on the Researcher 'A' Scale (award pending) would be about £3,810/monthly on a half-time basis.

Dept. of Education Project I. Observation of Curriculum Continuity (Miss S. Lawrence). Dept. of Psychology Project II. Interaction and the Presentation of Statements according to the 1981 Education Act (Dr. G.S. Hanlon). Dept. of PE and Sciences Project III. Investigation of Aerobic Training Methods of Human Functional Capacity (Dr. J. A. White).

Candidates may have the opportunity to register for a higher degree of the CNAA.

Further details may be obtained from Mr. J. Bowles, Chairman of Staff Development and Research Committee, West London Institute of Higher Education, 300 St Margarets Road, Twickenham, Middx. TW1 1PT.

Applicants should include a detailed curriculum vitae and the names and addresses of 2 referees. Applications should be returned by 28th June 1984.

(16562)

H18

Appointments Wanted

Personal

IMMEDIATE ADVANCES £100 – £50,000. Written terms on request. Regional Trust Ltd., 3131 Tower Bridge Road, Bromley, London W12 4DD. Phone 01-4912934 or 388 1416. LOOO

DR FI(L.)S9 German, 18 years teaching experience (French and English secondary school) and at teacher training at German university would like to settle down in Britain. Position wanted in secondary or tertiary education (German and English as a foreign language, teacher training), publishing house, etc. Please contact D/44 3828/15 or write to 3, The Cresent, Sheffield S17 4AT. (16719)

H18

TEESSIDE POLYTECHNIC
DEPARTMENT OF CIVIL AND STRUCTURAL ENGINEERING AND BUILDINGS

Lea Research Assistant (Hydraulics)

Salary. £5,649–£9,123 per annum

which includes payment for up to 6 hours teaching assignment per week.

All Polytechnic appointments are made on the understanding that the duties attaching to all posts may be varied from time to time in accordance with the needs of the Department.

The Head of Department would be willing to have informal discussions with intending applicants should this be desired. (Telephone (0642) 218121, Extension 4155).

The appointment which will be made as soon as possible is for a period of three years only.

Whilst the appointment is predominantly concerned with the research investigation described below the appointee will be required to contribute to the teaching work of the Department for up to six hours per week.

The investigation will consist of an experimental and theoretical study of air entrainment in dropshafts. An examination will be made of mechanism of entrainment when a vertical jet enters a body of fluid. The effect of wall roughness will be studied and an attempt will be made to illustrate the scaling relationship between hydraulic model and full scale air entrainment phenomena.

Applications are invited from graduates possessing at least an upper second class honours degree in civil engineering. The appointee will be required to register with CNAA for a MPhil/PhD.

Application forms and further particulars are available from the Personnel Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 3BA. Telephone (0642) 218121, Extension 4114.

Closing date: 31 July 1984.

(14999)

The University of Leeds
SCHOOL OF EDUCATION

Nurse Selection Project

Applications are invited for a RESEARCH ASSISTANT in the above School for work on the development of alternative selection criteria for entry to nurse training in accordance with the training rules of the UKCC, involving the use of test design, administration, analysis, computing, interviewing and reporting techniques.

A good honours degree involving computing and some experience of data analysis are required. Some knowledge and experience of nursing would be an advantage, but not obligatory.

The post is available for a fixed period terminating not later than 31 December 1985.

Salary within the 1B Range for Research and Analogous Staff (£6,150–£8,530)under review), according to age, qualifications and experience.

Informal enquiries may be made to Professor Derek Child or Dr. Jennifer Thompson (0532) 431751 (extn 6186, 7112, 6187, 6152).

Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference number 36/84/DC. Completed applications should be submitted as soon as possible and no later than 31 July 1984.

H11

University of Dundee
Department of Public Law

RESEARCH ASSISTANT

There is a vacancy available at this stage, for the period from September 1984 to May 1985, for an honours graduate in Law or Social Sciences to work full-time with Dr. A. C. Page and Mr P. Q. Watchman in the preparation of reports on a series of projects relating to the use of law in government, with special reference to formal and informal mechanisms of dispute settlement.

The successful applicant will be paid on an appropriate point within the range £6,510 to £7,650 per annum.

Prospective applicants requiring additional information before deciding whether to apply may contact Dr Page at the Department of Public Law, Tel: Dundee (0382) 23181, Ext. 6081.

Applications, including full career details and the names of two referees, should be lodged as soon as possible with the Personnel Office, The University, Dundee DD1 4HN. Please quote reference 2267/84/AC.

(55558)

H11

University of Newcastle upon Tyne
Department of Statistics

SERC/CASE RESEARCH STUDENTSHIP

Validation of Statistical Software

The Department is able to offer an SERC/CASE research studentship on the above topic, tenable for three years from October, 1984 and leading to the degree of PhD. The research will be carried out under the supervision of Professor G.B. Wetherill, and in collaboration with Dr. A. C. Pope and Mr P. Q. Watchman in the Department of Statistics at Hursley Park, Winchester.

Applicants should have, or expect to obtain by July, 1984, at least an upper second class honours degree with a substantial statistical content. Further details and application forms, are available from Peter J. Diggle, Department of Statistics, University of Newcastle upon Tyne, Newcastle upon Tyne, NE1 7RU.

(16728)

H11

The University of Sheffield
MRC/ESRC Social and Applied Psychology Unit

RESEARCH INTO HUMAN FACTORS AND INFORMATION TECHNOLOGY

Applications are invited for a long-term research position to initiate a new project within the Unit. The successful candidate will help plan and lead a team of researchers conducting cognitive and ergonomic investigations into human factors associated with information technology in manufacturing and other work settings. Established Unit research is examining social and organisational aspects of information technology, and links between projects will be encouraged.

The post is available up to retirement age from early 1985. Initial salary will be on scales applicable to the University Lecturer and Senior Lecturer scales. Good qualifications and research experience in psychology, ergonomics or a related discipline are required. Further details of the area to be developed and of the Unit are available from Professor Peter Warr, MRC/ESRC SAPU, University of Sheffield, Sheffield S10 2TN. Closing date 27 July 1984. Quote ref: R110/DI H11

University of Lancaster
Department of Law

RESEARCH ASSISTANT

Applications are invited from graduates in Law or in a relevant Social Science discipline for the post of Research Assistant to work on a project concerned with the legal regulation of age discrimination. Those graduating in the summer of 1984 are also eligible. The appointment is to be supported by a grant from the University Research Fund, and will be available for twelve months from September 1984. Salary within the range £6510 – £7,650. Enquiries for a research proposal to be possible.

Applications (5 copies) containing full career details and the names of two referees should be sent (quoting reference CT/7/84) to arrive NOT LATER THAN 10 JULY 1984, to the Establishment Office, University House, Lancaster, LA1 4YW, from whom further particulars of this post may be obtained.

H11

Research & Studentships continued

The University of Leeds
Department of Music

POSTDOCTORAL RESEARCH FELLOW OR PREDOCTORAL RESEARCH ASSISTANT

Applications are invited for the above post available for a fixed period of up to two years from 1 October 1984 or 1 January 1985.

Interest in the history analysis and criticism of opera, particularly of the late eighteenth century (including Mozart), required.

Salary on the IA Range for Research and Analogous staff (£7190 – £11,615) (under review) for postdoctoral candidates or on the IB Range (£8,319 – £8,550) (under review) for predoctoral candidates.

Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference no. 12/7/MC. Closing date for applications 15 July 1984. (10701) H11

University College Cardiff
Department of Physics

Applications are invited from persons who have a First or Upper Second Class Honours Degree in Physics, for a 3 year

SERC CASE RESEARCH STUDENTSHIP

leading to a Ph.D. tenable from 1st October, 1984. The physical properties (eg thermal and water vapour transport) and certain chemical properties (eg protection from sea water attack) of a novel textile insulating web relative to methods of manufacture and usage will be investigated in close collaboration with an industrial concern.

Applications should be sent to Dr D. Dewsberry, Department of Physics, University College, PO Box 78, Cardiff CF1 1XL, and should include the names and addresses of two referees. Ref: 2753. (10758) H11

University of Reading
RESEARCH OFFICER
Re-advertisement

Applications are invited for the post of Research Officer to work on a project concerned with the implementation and effectiveness of road safety education programmes in schools and FE Colleges. Applicants should be graduates teachers with teaching experience in secondary schools and with degree level qualification or experience in educational research and measurement. The post is for a fixed period until September 1986 with a salary in the range £7,190–£11,615 plus USS superannuation. Apply, quoting Ref. R1864 for further particulars and application form to Personnel Office, University of Reading, Whiteknights, Reading RG6 2AH. Closing date for applications 9.95 July 1984. (58353) H11

Colleges of Art

Falmouth School of Art
Wood Lane, Falmouth
Cornwall TR11 4RA

The following posts are from September, 1984

B.A.(HONS.) DEGREE COURSE IN FINE ART

All at Lecturer I – £10,15 per hour (under review)

Photography/Film
1 post – 8 hours per week.

Painting
1 post – 5 hours per week.

Sculpture
1 post – 3 hours per week.

Applications are invited from practising artists with experience in these subjects.

Fine Art
2 posts – 5 hours per week.

Applications for these posts are invited from practising artists to teach on the B.A. (Hons.) Course in Fine Art.

The course covers the areas of Painting, Sculpture, Printmaking and Photography/Film. Preference will be given to candidates with interest in more than one area of the course.

These part time posts will be blocked over a 36 week year and limited travelling expenses will be paid.

Application forms, to be returned by 3rd July, may be obtained by sending a stamped addressed envelope to the Registrar at the above address. H9

Librarians

The Wellcome Trust

Applications are invited for the new post of Assistant Librarian in the Wellcome Museum of Medical Science. The position will be for an initial period of three years.

Duties will include the general administration of a teaching collection of monographs and serials relating to tropical medicine since c.1870.

Applicants must be professionally qualified graduates. Training in medical librarianship and/or experience in a medical library, and a reading knowledge of one or more modern European languages will be advantageous.

Starting salary in the lower half of the range £7,190–£14,125 (plus £1,186 London Weighting) – under review. Benefits include free PPP, five weeks' annual leave, etc.

Apply before 28 July 1984 giving full career details and the names of two referees to the Director of the Library, Wellcome Institute for the History of Medicine, 183 Euston Road, London, NW1 2BP.

Industry and Commerce

INPUT

The leading home computer software publication has vacancies for

EXPERIENCED PROGRAMMERS WRITERS OR EDITORS

who have detailed knowledge of one or more of these machines

Sinclair Spectrum, Commodore 64, BBC B or Dragon 32.

Candidates must be able to work to tight deadlines under pressure. Vacancies are for full-time staff or freelance contributors.

Please apply in writing, enclosing a CV to—

Jennie Otway-Norwood, Input, Marshall Cavendish Limited, 58 Old Compton Street, London W1V 5PA. (14961)

Colleges of Art continued

Leistershire County Council
An Equal Opportunity Employer

Loughborough College of Art and Design

Department of History of Art/Complementary Studies

Part-time

LECTURERS IN ART AND DESIGN HISTORY

required to contribute to either of the following components of a new part-time programme for BA (Hons) Art and Design students:

1. Primitive, African, and Oriental or non-Western cultures.
2. The history of interior Design since 1800.

Applicants should be qualified graduates and will be required to teach for five hours on Mondays for the Autumn and/or Spring terms 1984/85.

Salary: £12.15 per hour plus assistance with travelling expenses.

Written applications (no forms) giving age and full details of training, qualifications and experience, and the names and addresses of two referees to the Registrar, College of Art and Design, Radmoor, Loughborough, Leicestershire, as soon as possible together with sessional course proposals. (10700) H8

Overseas

The Ohio State University

POSTDOCTORAL FELLOWSHIP IN MECHANICS/ METALLURGY

The Department of Metallurgical Engineering has an immediate opening for a postdoctoral research associate in the area of mechanics, metallurgy. The ideal candidate will possess a strong interest in numerical methods, with particular emphasis on finite-element modelling, and a background in the mechanical behaviour of materials. He will contribute to a five-year program to study the mechanical constitutive relations for creep and plasticity, as applicable to large-strain forming and failure analysis.

An appointment period of at least two years is desired. Salary and benefits will be commensurate with ability and experience but will be not less than $20,000 per year. Send resume, recent publications, and the names of three referees to: Professor R. H. Wagoner, Department of Metallurgical Engineering, The Ohio State University, 116 West 19th Avenue, Columbus, Ohio 43210, U.S.A. (10576) H13

Adult Education

London Borough of Richmond upon Thames

Richmond Adult College
Parkshot, Richmond, Surrey TW9 2RE
Telephone: 01-940 5978

1. LECTURER II (FOOD STUDIES)

(Salary £7,315–£11,568 plus Outer London Allowance of £645 p.a.)

We are looking for someone with good catering qualifications and experience to undertake the development of a new catering service for the college, and to supervise and contribute to relevant courses within the Department of Exercise Food and Health.

2. LECTURER II (3D AND CRAFTS)

(Salary £7,315–£11,568 plus Outer London Allowance of £645 p.a.)

Applications are invited for a lecturer to take charge of this recently reorganised area within the College's Department of Art and Design. While the predominant subject both in terms of hours and number of courses is pottery/ceramics, also included are jewellery, sculpture, stained glass and sculpture.

The successful applicant must be a practising artist in at least one of the subjects covered by the area (preferably pottery/ceramics). The supervisory and leadership qualities required for this pivotal post within the department require someone of exceptional art and adult educational experience.

Further details and application forms (sae please) from The Principal of the College. Closing date for application 30th June 1984. (53549) H14

Overseas cont

University of Karlstad, Sweden

2 LECTURESHIPS IN MANAGEMENT SCIENCE

The University of Karlstad – a medium-sized university in central Sweden (student population 2,500) – wishes to appoint 2 lecturers in management science as soon as possible. Minimum qualification: Ph. D. in a relevant subject. Knowledge of Swedish is not essential but an agreement to that effect may be given in English.

Salary: £11,000–£13,600 per annum.

Further particulars can be obtained from: Charlie Karlsson, Head of Dept. of Economics and Business Administration, University of Karlstad.

Applications including references should be sent to the Registrar, University of Karlstad, Box 860, S-650 06 Karlstad, Sweden, to arrive not later than 15th August 1984. (10792) H13

Property

DORDOGNE – SUCCESSFUL SCULPTORS House for sale, unusual and sympathetically designed. Old restored farm house, 5 beds 2 lounges plus modern facilities. 350,000 FF. Tel: 010 33 (45) 64 98 16. (53560) H30

Overseas cont

QUALIFIED ENGLISH TEACHER required for 6 private English school in Thessaloniki Greece. High standards. Please send full CV, recent photograph and telephone number to: Mrs Helen Stergiani 92 Kassandrou Street, Thessaloniki, Greece. (53562) H15

REMINDER

Copy for Classified Advertisements in the

THES

should arrive not later than 10 a.m. Monday preceding publication

Colleges of Art continued

FALMOUTH SCHOOL OF ART, WOODLANE, FALMOUTH, CORNWALL TR11 4RA
Tel. Falmouth (0326) 313269

Foundation and Datec General Art and Design Courses
Part-time posts available from September, 1984
1 post Two-Dimensional Design/Textiles
1 post Ceramics/Jewellery
1 post Visual Communication
1 post Painting

Details and application forms from:
The Registrar of the School of Art to whom applications should be returned by Thursday 5th July. (14957)

cont

WAIT Western Australian Institute of Technology

Tenured Appointment

Senior Lecturer
PUBLIC SECTOR MANAGEMENT

The School of Management, one of five schools within the Division of Business and Administration, offers courses in Organizational and Management Studies, Marketing, Personnel and Industrial Relations, Public Administration (including Local Government) and Educational Administration within the Division's Bachelor, Graduate Diploma and Master of Business programmes.

A Senior Lecturer is required to develop and coordinate the area of Public Sector Management which currently includes Educational Administration and Public Administration (including Local Government). The appointee will be required to teach in area of expertise.

Applicants require a strong disciplinary background in either Educational Administration or Public Administration, and ability to provide new initiatives to meet the changing needs of the public sector. Evidence of research interests in the area would be an advantage.

Professional experience at a senior level and teaching to postgraduates in tertiary institutions is highly desirable. The capacity to provide educational leadership and develop close ties with the public sector is sought. Applications close 13 July. (Ref 679).

Salary range: Senior Lecturer $32,677 – $38,086.

Conditions include fares for appointee and family plus assistance with removal expenses; superannuation
Applications: Details including the names and addresses of three referees should be submitted in duplicate not later than 13 July to the Executive Officer, Western Australia House, 115 Strand, London WC2R 0AJ, from whom further information may be obtained
When applying please quote Ref No and Code HE8

SOUTH AUSTRALIAN INSTITUTE OF TECHNOLOGY

Lecturer in Physiotherapy

(This position is available on a contract basis of up to three years in the first instance).

DUTIES: Mainly in the area of Neurology where the appointee will be required to co-ordinate and teach within the Bachelor of Applied Science in Physiotherapy; assist students with project work and plan and implement a postgraduate programme in the Graduate Diploma in Physiotherapy (Neurology). Some general administrative duties may be required.

QUALIFICATIONS: Diploma or Degree in Physiotherapy recognisable for state registration purposes by the Physiotherapist's Board of South Australia. Broad professional experience including clinical experties in the above area is necessary. A postgraduate qualification and some experience of clinical research is desirable.

ANNUAL SALARY: Within the following range according to qualifications and experience:

A$24,353 to A$31,994

Applicants not meeting the requirements for lectureship may be offered a position in the Assistant Lecturer range A$20,991 to A$24,047.

The successful candidate will be expected to commence duties in January, 1985.

Further information may be obtained from Ms. J. Gamble, Staffing Officer, S.A. Institute of Technology, North Terrace, Adelaide, South Australia, 5000, to whom applications, including the names and addresses of three referees should be forwarded. (14956)

Overseas continued

WAIT Western Australian Institute of Technology

School of Mathematics and Computing

Head of Department
COMPUTING SCIENCE
Salary $43,068 pa

The appointee to this newly established position will head the Department of Computing Science in the School of Mathematics and Computing. The Department offers degree and graduate diploma courses in computing and has responsibility for a number of service units. A Masters degree programme in Computing Science has been approved for commencement in 1985. In addition to growth in student numbers over the next few years, there is an expectation of increased involvement in major applied research initiatives with industry, research organisations and with the developing WA Technology Park.
The Head will be required to provide academic leadership for the efficient conduct of the Department, to teach in an area of expertise and to provide leadership in the maintenance and development of industrial consultancies, projects and research.
The successful applicant will have a strong academic background, a distinguished record of scholarly achievement and research in computing sciences, and experience in group leadership and project management. Preference will be given to those who can demonstrate a commitment to the development of programmes which excel in both teaching and research. (Ref 678).

Tenure: The post offer academic tenure. It is institute policy that persons appointed as Head of Department will be assigned the appropriate duties for an initial period of three years with eligibility for renewal. Should an appointee not continue as Head of Department, the academic level and salary are retained.
Conditions include fares for appointee and family plus assistance with removal expenses; superannuation
Applications: Details including the names and addresses of three referees should be submitted in duplicate not later than 13 July to the Migration Officer, Western Australia House, 115 Strand, London WC2R 0AJ, from whom further information may be obtained
When applying please quote Ref. No and Code HE5

UNIVERSITY OF BOTSWANA

DEPUTY VICE CHANCELLOR

Applications or nominations are invited for the position of Deputy Vice Chancellor of the University of Botswana.

The University of Botswana was established in July 1982 and currently has an enrolment of approximately 1,400 students (including 180 pre-entry science course students) in the faculties of Education Humanities, the Social Sciences and Science.

The Deputy Vice Chancellor will assist the Vice Chancellor in directing the academic and administrative affairs of the university. The Deputy Vice Chancellor shall as Vice Chancellor when the post of the Vice Chancellor is vacant or when the Vice Chancellor is absent or unable to act.

Applicants should have a distinguished record in tertiary education, substantial experience in educational administration at high level, demonstrated qualities of leadership and management ability and a commitment to the needs of advanced education in developing countries.

It is expected that the appointee will assume duties as early as possible but not later than 3rd December, 1984.

The Council of the University of Botswana reserves the right to appoint by invitation upon such terms and conditions as may be determined by it.

Basic salary: P22,008 p.a. (fixed)

Benefits and allowances include medical aid plan, personal accident and life insurance. Assistance towards university education of dependant children and spouse, motor car allowance, education allowance, contract addition of 30% of basic salary and gratuity payable to staff on expatriate terms of service.

The university provides accommodation for which rent is payable.

Applications/nominations close on 31st July, 1984.

The University of Botswana would be pleased to hear from men and women who may wish to be candidates for the position of Deputy Vice Chancellor or who wish to suggest names of people whom the university might consider. Please write in confidence enclosing a c.v. and names of three referees to:

The Registrar
University of Botswana
Private Bag 0022
Gaborone, Botswana
Southern Africa

(14965)

EFL TEACHERS
ENGLISH LANGUAGE CENTRE
KING ABDUL AZIZ UNIVERSITY, JEDDAH, SAUDI ARABIA

We are recruiting teachers of English including teaching couples for September 1984. Contracts will be for one year renewable.
Qualifications:
Must hold M.A. TEFL or B.A. English + Diploma TEFL
Minimum 5 years experience.
Benefits:
Salary up to £18,000 p.a. tax free. Free furnished accommodation. 60 days passage paid leave. Terminal gratuity.
Applications:
Write including a detailed C.V. and telephone contact number to:
Box No: 0765
Telephone: Wivenhoe (0206 22) 2780
Interviews will be held in London between 16th and 22nd of July.
(16470)

PLEASE MENTION THE T.H.E.S. WHEN REPLYING TO ADVERTISEMENTS

The Times Higher Education Supplement

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